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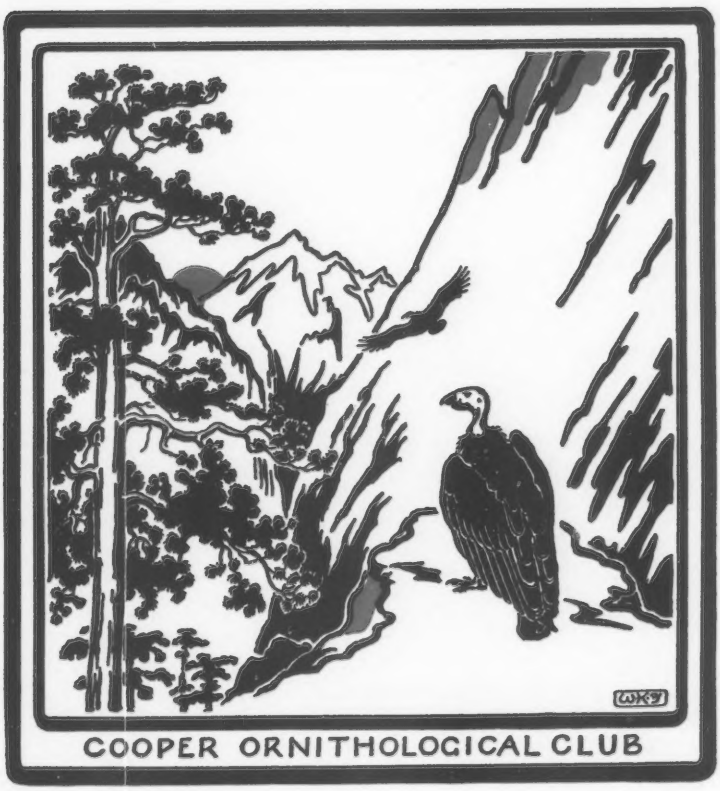
THE CONDOR

A Magazine of Western Ornithology

Volume 46 January-February, 1944 Number 1



COOPER ORNITHOLOGICAL CLUB

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A Magazine of Western Ornithology

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Museum

THE CONDOR

VOLUME 46 JANUARY-FEBRUARY, 1944 NUMBER 1

ROOF-NESTING KILLDEERS

By CLINTON G. ABBOTT

The adoption of flat, graveled roofs as nesting sites by nighthawks has long been well known to ornithologists. That a bird so essentially terrestrial as the Killdeer (*Oxyechus vociferus*) should similarly be attracted by the same type of elevated plane is much less to be expected. In fact the only published records of such occurrences known to me are those of Pickwell (Auk, 42, 1925:485-496), who tells of finding a Killdeer's nest in 1922 on the roof of a grandstand at the State Fair Grounds near Lincoln, Nebraska, and of Stoner (Condor, 39, 1937:127), who had a similar experience in 1936 on the roof of the Benicia Arsenal, Benicia, California.

Other instances of roof-nesting Killdeers have lately been brought to my attention by friends. Two adjacent public buildings in Exposition Park, Los Angeles, California, have been favored by Killdeers in recent years—both buildings simultaneously for part of the time, at least. In May, 1943, Norman C. Bilderback showed me photographs which he had taken in 1942 and 1943 of nesting Killdeers on the roof of the California State Exposition Building. Soon thereafter George Willett informed me that a pair of Killdeers had also been nesting on the roof of the near-by Los Angeles Museum. When I expressed interest in the subject and my belief that the facts were worthy of publication, both observers placed their notes in my hands, with the suggestion that I incorporate them in an inclusive account.

While engaged in spraying black-out paint on the skylights, on May 21, 1942, Mr. Bilderback found two occupied Killdeers' nests on the graveled part of the State Exposition Building roof, one each on two separated wings. Both contained four eggs. One nest was close to a ventilating stand-pipe and was selected for photographic experiments. "The tripod was set up about 9:30 a.m. some 4½ feet from the nest," the notes state, "and a thread was stretched from the shutter-release to a point about 50 feet distant, which was practically in full view of the nest. The weather was exceptionally hot and the bird appeared to be shading the eggs when at the nest. Both parents, sometimes singly and sometimes as a pair, went through the familiar antics, such as briskly running with the characteristic smooth glide and then pausing to bob intermittently, engaging in 'broken wing' tactics, and pretending to brood a patch of gravel." A picture was taken and the camera was left in place until after lunch, when the incubating Killdeer had apparently grown accustomed to the ominous object and more pictures were obtained. The following August a visit to the roof failed to reveal the slightest sign of shell fragments or other evidence of nesting.

On April 4, 1943, Mr. Bilderback found the Killdeers again nesting on the roof where the photographs were taken in 1942, but not at the other site. The 1943 nest, containing three eggs, was in the identical spot that was used in 1942, as may plainly be seen by comparing its relation to the stand-pipe. A blind was employed this time and within an hour a number of pictures was secured of the Killdeer at the nest.

Fig. 1. Eggs of the Killdeer on roof of California State Exposition Building, Exposition Park, Los Angeles; May 21, 1942. Photograph by Norman C. Bilderback.

A question that comes quickly to mind is, How do the young Killdeers reach the ground? Or it might better be expressed, How many of the young ever reach the ground in safety? Mr. Bilderback states that the distance from the edge of the roof of the California State Exposition Building to the lawn below is 42 feet. The rain-water drains can be of no aid, because their upper ends are screened and their lower ends discharge directly into the sewer. The only youngsters to survive a fall to the ground are probably those whose descent is broken by shrubbery or other soft vegetation. Old employees of the building, who say that the birds have nested on the roof "for a number of years," have more than once liberated chicks from light wells in front of basement windows, into which they had tumbled. Those that were thus assisted were quickly taken in charge by their parents; and a downy young was observed by Mr. Bilderback in 1942 in the company of an adult in the Exposition Park rose garden near the building. There is no direct evidence, however, that any of these chicks were hatched on the roof.

Mr. Willett's experience with roof-nesting Killdeers at the Los Angeles Museum is a story mainly of tragedy. "A pair of Killdeers," he writes, "have nested on the Los Angeles Museum roof (4th floor) since 1938. After the young were hatched, they usually fell off the roof and were killed by the fall. In 1941, the last remaining young of the year was captured on the roof by Miss Irene Tillinghast and carried down to the park rose garden, where it was accepted by the parent birds. In 1942, the eggs were taken to prevent hatching and consequent destruction of the young. This year (1943) the apertures through which the young formerly made their exit were plugged so that they were unable to fall from the roof, but before we realized what was happening, they had

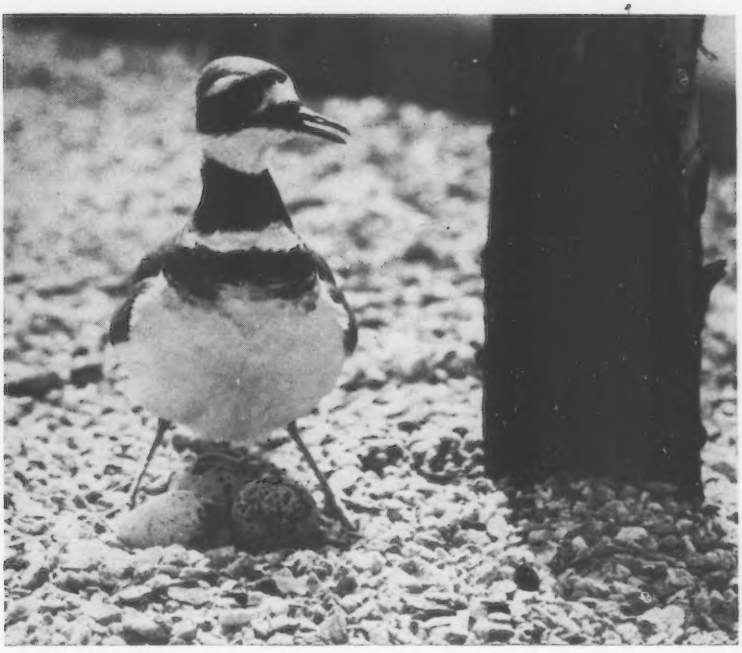

Fig. 2. Killdeer preparing to settle on nest after period of flying, April 4. 1943. Photograph by Norman C. Bilderback.

reached a point so near starvation that we were unable to save them. As was to be expected from birds with the habits of the Killdeer, the parents apparently made no attempt to bring food, and the young were unable to get to where the food was.

"I do not see how events could have been different unless we had detailed someone to spend most of his time watching the birds. The whole thing seems to constitute excellent evidence against reasoning power in Killdeers.

"Six downy young from the nestings are preserved in the Los Angeles Museum collection, as follows: 2, April 27, 1938; 2, April 8, 1940; 2, May 21, 1943."

San Diego Society of Natural History, Balboa Park, San Diego, California, July 22, 1943.

NESTING OF THE BROWN-CAPPED LEPTOPOGON IN MEXICO

By ROBERT T. MOORE

According to Griscom (Bull. Amer. Mus. Nat. Hist., 64, 1932:275) the flycatcher known as the Brown-capped Leptopogon (*Leptopogon amaurocephalus pileatus*) is "an exceedingly rare and little-known bird in the whole of Central America." Ridgway (Bull. U. S. Nat. Mus., 50, part 4, 1907:463) states that the nidification of the genus is "unknown?," although in a footnote on the same page he cites a publication by Allen (Bull. Amer. Mus. Nat. Hist., 5, 1893:153) whose record his question mark seems to doubt. Allen merely gives the measurements of eggs and states that they are "pure white." Since then, Bertoni (Hornero, 1, 1918:190) has described the nest of *Leptopogon amaurocephalus plumbeipes* of Argentina, mentioning its globular form and its composition of moss. The description of nests of the Mexican form of the species, herein presented for the first time, would seem to add materially to our knowledge of the unusual nesting habits of this group of flycatchers.

In April and May of 1942, Dr. Francis H. Tomlin of Haddonfield, New Jersey, and the author camped for eight days at Presidio, a locality about 35 kilometers south of Córdoba, Vera Cruz, whose altitude is approximately 1000 feet.

On April 29, Abraham Ramirez, my guide, who has a good practical knowledge of the species of his region, told us he had found a nest of an unknown bird, resembling an *Empidonax*, in a valley about two miles from our camp. On April 30 he led us to a fern-bordered ravine shaded by lofty trees on the edge of a banana grove. Beneath a rock some ten feet in diameter, which was bound to the top of a bank by the encompassing roots of a large tree, was a black hole, three feet high and six feet long. So dark was it that the pupils of our eyes had to enlarge for a minute before we could make out a roundish object hanging to one of the roots by two parallel, flat, black tendrils. These tendrils, a sixteenth of an inch in diameter, six inches long and almost straight, proved on examination to be one tendril tied in a knot and looped at the middle. I cannot declare that the knot was made by the birds, for I did not discover it in time to seek confirmation by examining another nest, not collected, which employed the same kind of tendrils. However, the use of two parallel fibers or roots for hanging the nest in the air to an object overhead seems to be a standard type of architecture for this flycatcher.

Subsequently we found two other nests of the species and each one was supported underneath a rock or log practically in the same manner. The general appearance of each is that of a round ball or ellipse of tightly woven moss, five to six inches in diameter, swinging in space about six inches below the point of attachment and depending solely on two tendrils to support it in the air. The top of the first nest has a neck two inches long by one inch wide, which is woven to the knot of the tendril by means of cobweb-like material. This nest consists of green and dried moss, woven around a fragile framework of very fine roots, plant stems and grasses; the dimensions are eight inches long by six inches wide. The entrance is through a hole about one and a quarter inches in diameter placed on one side. Delicacy is given to the structure by tiny white and tan-colored fluffs of thistle-down bound into the outer surface, while the entire lining is composed of the same dainty material.

The second nest also was attached to the bottom side of a huge projecting rock, a mile up on the mountainside in the same dark forest, and it was hung in space by two flat black fibres. A third nest reveals the same type of architecture, but differs in being held up by two roots securely bound deep into the moss and in being more oval in

shape instead of spherical. Furthermore, it is larger—nine inches long by four and three-quarter inches wide. Made of the same material, it is decorated and lined with similar fluffs of thistle-down. One of the roots from above extends through the center of the nest in a curve, being only slightly covered by the lining on the inside; it projects at the bottom for at least four inches. Two inches from it a group of nine other roots protrude through the moss for a distance of four or five inches.

May 1 was vibrant with heat waves and hotter than the previous days. Through the steaming haze we plodded across the half mile of open space through a banana plantation. Having come by a different route than the preceding day, we plunged into the same dark ravine with the intention of taking photographs of nest number one. Feeling through the small hole in the nest with one finger, I found two young birds within. Subsequently, when it was collected, the young proved to have tails three-quarters of an inch long and to be marked almost exactly like their parents, the only difference being that the crowns were a darker brown, almost black. All the rest of the markings were the same, including the two wing bars of dark buff, the green backs, the brown rumps and the yellow posterior underparts. Their bills are not hooked like those of the parents. Although a Leptopogon is small, less than five inches in length, its body has a width only little less than the diameter of the hole on the side of the nest.

After putting up the umbrella blind, I soon learned that the task of photography in such a dark ravine would require superhuman ingenuity to obtain results. Even if I had possessed the accessories of Hollywood, there would have been no position from which to reflect sunlight into the nest and there were only two separate hours of the day when there was sufficient light near the top of the rock to take a "still" with supersensitive films. I failed miserably! During the whole of the first day neither parent came closer than twenty-five feet to the nest. For an instant one of them darted into a sunlit spot directly between me and the sun, where photography was impossible.

May 2 proved to be another futile day; some four hours of it were spent in the blind. Each morning the blind had to be erected again! If it had been left in situ all the night, according to Abraham, it would have disappeared. There were far too many trails, and far too many natives! However, this day's work was not entirely fruitless, since three things were discovered about the habits of Leptopogon. First, its dark brown crown is a very good field mark differentiating it from other small flycatchers. Second, its call-note is exceedingly loud and very harsh, seeming to come from a bird three times its size. Third, it does not confine its food to small insects. For nearly a half hour, it attempted to carry to the young a grasshopper one and a half inches long. Indeed its size annoyed the bird, for the grasshopper kept slipping out of its bill, forcing the bird to shift its grip repeatedly. Throughout one period of ten minutes, when it never lost its hold completely on its prey, it continued to call nervously. Although no motion of the bill could be observed, the calling seemed to cause a constant shifting of grip.

The third nest of Leptopogon was found by Ramirez on May 3. It was hung by two round roots, five inches long, under a huge log densely covered with moss and tropical growth. The log arched a stream ten feet in width. The three well-incubated eggs which the nest contained were immaculately white with a slight gloss. One of them was broken, but the other two were successfully cleared of their large embryos. One egg measures 18.5 mm. x 14.8 mm. and the other 19.8 mm. x 14.5 mm. In appearance they resemble the eggs of a very small woodpecker, but the shell is much more fragile.

From the above it will be noted that the nest sites were quite different. Number one was in a dark ravine in a forest close to a banana orchard, number two beside a narrow obscure trail high up on a mountain side, and number three swinging in space six feet

above a dashing stream. All of the parent birds were extremely shy, and those of nest two were seen only once by Ramirez. The parent females of both nests numbers one and three were obtained, as well as the two nestlings of nest number one. Only at nest number one were both parents observed at the same time and, as they are marked alike and differ only slightly in size, it was impossible to determine which was the male and which the female. Since both birds collected were females, presumably this was the sex which was observed most often.

On May 3 I made one last attempt to secure photographs of nest number one. This time I placed the blind on the opposite side of the nest, hoping that the parent bird would land on the same root, where it had appeared the day before. She did not! Outwitting me completely she landed in the one sunlit opening on the other side of the huge trunk, where she was obscured by mats of ferns. Throughout this day she signalled her approach by loud flutters of her wings. Knowing that it was my last chance in the blind, I waited for hours until it grew quite dark and black storm clouds blotted out the west. Thus came to an end a photographically unsuccessful, but interesting experience with one of the rarest birds of the Mexican tropics.

California Institute of Technology, Pasadena, California, August 6, 1943.

NOTES ON SUMMER BIRDS OF GUERRERO

By WILLIAM B. DAVIS

The paucity of information concerning the birds of the Mexican state of Guerrero (see Griscom, Bull. Mus. Comp. Zool., 75, 1934:367-422, and Auk, 54, 1937:192-199) seems to warrant the recording of information gathered in that state by the expedition of 1942 of the Department of Fish and Game, Agricultural and Mechanical College of Texas. Our interest was divided about equally between the mammals and birds of the region, and due to limited time, the collections were neither as large nor as representative as desired. Even so, we were able to preserve 153 specimens of 67 species, four of which seemingly constitute additions to the state list. These are *Colymbus dominicus brachypterus, Heterocnus cabanisi, Crocethia alba,* and *Progne chalybea chalybea.* Most of the birds taken had previously been reported in Guerrero, and consequently I have limited my remarks about them to such topics as abundance, habits, breeding condition, and weights, which supplement the printed record.

COLLECTING STATIONS

(1) Rio Aguacatillo, 30 km. N Acapulco, 1000 feet, August 3-14. Collecting was done within a radius of two miles, except for one trip on August 14 to Laguna Coyuca. Collecting was done at the Laguna (12-22 km. NW Acapulco) and en route to and from camp. Collecting also was done on August 3, en route to the camp from Mexico City, at El Naranjo, Rincon, Tierra Colorada (at Rio Papagayo), and along the Rio Xolapa. Our camp at Rio Aguacatillo was near the village of El Treinta. The vegetation is tropical in nature (bananas, coffee) and of two types: (1) riparian and (2) upland "brush." One hundred and twenty-three specimens of birds of 45 species were taken.

(2) 15 km. S Chilpancingo, 4300 feet, August 14-20. Collecting was done within a radius of two miles of camp except for one short trip (August 16-18) to the cloud forests on the mountains southwest of Chilpancingo. The main purpose of this trip was to obtain mammals, consequently few birds were taken. The main camp was established on a small creek near the divide, in open, grassy, rolling hills. Three lagoons were near by, as was a deep canyon in which the vegetation was a dense jungle. Shrubs and maguey-like plants covered the higher ridges, especially the north slopes, adding a semi-desert aspect. Thirty-two specimens of 21 species were taken. This area is rich in bird life and well deserves the undivided attention of the ornithologist.

The cooperation of the Texas Cooperative Wildlife Research Unit in lending certain equipment is hereby acknowledged as is the generous assistance of the Direccion General Forestal y de Caza of Mexico. Ludlow Griscom has read the manuscript and made helpful suggestions.

LIST OF SPECIES

Colymbus dominicus brachypterus. Mexican Grebe. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 19. Several of these grebes were observed in the lagoons near our camp. The female taken had an egg, covered with shell, in the oviduct. The bird weighed 131 grams. Seemingly this grebe has not been recorded hitherto from Guerrero as it is not listed by Griscom (*op. cit.*).

Butorides virescens maculatus. Spotted Green Heron. 1 ♂, 15 km. NW Acapulco, August 14; 1 ♀, 22 km. NW Acapulco, August 14. In the marshy areas along the seacoast these small herons were common. The gonads were small (non-breeding). The male weighed 161 grams; the female, 168 grams.

Heterocnus cabanisi. Mexican Tiger Bittern. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7. Tiger Bitterns were not common at this locality, but doubtless they breed here. This specimen is in juvenal plumage with part of the natal down still adhering to the feathers on the head and neck. The bird was taken from a large nest, built of sticks, placed about twenty feet up in a

large tree overhanging the river. No marshes were in the vicinity. Seemingly this constitutes the first record of this species in Guerrero. The juvenile weighed 914.4 grams.

Buteo magnirostris xantusi. Colima Gray-tailed Hawk. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8. These hawks were not common at this locality; only three were encountered. The ova were minute; the bird weighed 290.7 grams.

Asturina nitida plagiata. Mexican Goshawk. 1 ♂, 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 6. This hawk was by far the commonest raptor at this locality, where it was observed daily, flying over camp or sitting on bare limbs of trees near the river. The gonads of both birds were small; the male weighed 404 grams; the female, 571.5 grams.

Ortalis vetula poliocephala. Gray-headed Chachalaca. 2 ♀ ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 4, 5. Chachalacas were numerous, both in the upland brushy areas and in the riparian growth along the river. They were seen on a number of occasions in trees, feeding on a large, green fruit. The ova of both specimens were small; the birds weighed 733 and 742 grams.

Philortyx fasciatus. Barred Quail. 3 ♀ ♀, 14 km. N Acapulco, 1100 ft., August 3; 4 ♂ ♂, 2 ♀ ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 9-11; 1 ♂, 1 ♀, 16 km. S Tierra Colorada, 800 ft., August 3. These quail were abundant along the highway from Tierra Colorada to Acapulco. They preferred upland brush areas and cornfields and, even though nesting, as evidenced by the presence of eggs in the oviducts of females, they were in coveys of from ten to forty birds. When flushed from the ground, they flew rapidly to the nearest dense brush where they alighted in small trees and concealed themselves. At such times they kept uttering a series of short, loud calls. They were extremely difficult to flush from dense cover, for they kept flying from one tree to another. In areas supporting only scattered low brush, they sought available cover by flying a short distance, alighting, and then running. So well do they hide, even in sparse cover, we were unable to locate one crippled bird that we knew was within a radius of twenty feet.

We were surprised at the lateness of the breeding season. All females taken had eggs, some covered with shell, in the oviducts; the testes of all males were much enlarged. No young of the year were recognized. Males weighed from 120 to 166 grams; females from 145 to 168 grams.

Jacana spinosa gymnostoma. Mexican Jacana. 1 ♀, 22 km. NW Acapulco, August 14. This species is a common inhabitant of the marshy areas along the coast near Acapulco. The ova of this specimen were enlarged; the bird weighed 154.3 grams.

Charadrius collaris. Azaras Ringed Plover. 3 ♀ ♀, 12 to 14 km. NW Acapulco, August 14. Ringed Plovers inhabited the sandy and grassy beaches northwest of Acapulco, where they occurred in considerable numbers. The ova were small; the birds weighed from 25 to 30 grams.

Actitis macularia. Spotted Sandpiper. 3 ♀ ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 9-13. Spotted Sandpipers were common inhabitants of the sand banks and bars in the river. Seemingly they were migrants. The ova of all three were minute; the birds weighed from 32.4 to 36.6 grams.

Crocethia alba. Sanderling. 1 ♂, 1 unsexed, 12 and 16 km. NW Acapulco, August 14. Sanderlings were numerous along the sandy beaches northwest of Acapulco, where they occurred in company with *Charadrius collaris*. These birds were doubtless migrants; the testes of the male were minute. This individual weighed 52.5 grams. Seemingly this is the first record of the species for the state.

Columba fasciata fasciata. Band-tailed Pigeon. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 20. Some twenty of these birds were observed high on a canyon wall near our camp. The specimen taken is a nearly full grown young; it weighed 262.7 grams.

Columba flavirostris flavirostris. Pink-billed Pigeon. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 9. This large pigeon was rarely encountered by our party at this locality, and then only in the hills, away from the river, where it resorted to the taller trees. This female had minute ova; the bird weighed 265.4 grams.

Scardafella inca. Inca Dove. 2 ♂ ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8-9. Inca Doves were the most abundant bird of the riparian association. The large size of the testes indicated that the breeding season had not terminated. These birds weighed 44 and 49 grams.

Leptotila verreauxi angelica. White-fronted Dove. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8. On numerous occasions these doves were observed in pairs in the trees along the river. Their antics, plus the fact that the male taken had enlarged testes, led us to think they might still be nesting. This male weighed 173 grams.

Aratinga canicularis eburnirostrum. Salmon-fronted Paraquet. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8. This beautiful paroquet was not uncommon at this locality, but it was difficult to collect. Numerous flocks were observed flying high, well out of shotgun range. The testes were small; the bird weighed 87 grams.

Amazona albifrons albifrons. White-fronted Parrot. 6 ♂ ♂, 4 ♀ ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 9-12. "Patriotic" parrots (red, white, and blue on the fore part of the head) were abundant in the upland thickets, especially near cornfields, where they concentrated in

the early morning and again in the evening to feed on the ripening corn. The testes measured about 5 mm. in length; the ova were minute. The weight of adult birds varied from 240 to 256 grams; nearly full grown young weighed from 198 to 203 grams.

Piaya cayana mexicana. Mexican Squirrel Cuckoo. 2 ♂♂, 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7-12; 1 ♂, 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 18. In spite of their large size, these cuckoos are inconspicuous in the dense brush, which they seem to prefer. The breeding season was still in progress in early August; all the males had enlarged testes (breeding size). The weight of males varied from 101 to 110 grams; females, 94 to 109 grams.

Geococcyx velox. Lesser Road-runner. 1 ♂, 15 km. S Chilpancingo, 4300 ft., August 20. Several of these small road-runners were observed in the semi-arid mountains south of Chilpancingo where they preferred terrain dotted with brush and maguey-like plants. The testes of this specimen were small; the bird weighed 207.6 grams.

Crotophaga sulcirostris sulcirostris. Groove-billed Ani. 2 ♂♂, 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8-12. These birds were seldom encountered by our party at this locality, but they were common near the coast. They preferred dense thickets and banana groves. Seemingly the nesting season was still in progress in August as both males had enlarged testes. The female weighed 76.5 grams; the two males, 88 and 92 grams.

Ciccaba virgata amplonotata. Kelso Wood Owl. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 6. These owls were common inhabitants of the upland brush association near our camp where they were heard calling nightly. Our specimen was collected by the aid of a head lamp. The testes were small; the bird weighed 323.7 grams.

Chordeiles acutipennis micromeris. Yucatan Nighthawk. 1 ♀, 14 km. NW Acapulco, sea level, August 14. Nighthawks of this species apparently were nesting in some numbers along the beach at this locality. This female had a well-developed brood patch; the bird weighed 55.2 grams.

Nyctidromus albicollis nelsoni. Nelson Cuiejo. 1 ♂, 16 km. S Tierra Colorada, 800 ft., August 3; 1 ♂, jv., Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 12. This is one of the commonest birds observed or heard at night in the tropics near Acapulco. While hunting at night with the aid of head lamps, our party flushed numbers of them from the ground. The young male is about two-thirds grown, the tail and beak being shorter than corresponding parts of the adult. The testes of the adult were small; the adult weighed 34.5 grams.

Amazilia violiceps violiceps. Violet-crowned Hummingbird. 1 ♂, jv., 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 19, 20. These small hummingbirds, with white under parts, were conspicuous at this locality, occurring on the rolling, grassy hills as well as in the canyons. The male was nearly full grown; its weight was 5.8 grams. The female had small ova and weighed 6.2 grams.

Cynanthus doubledayi. Doubleday Hummingbird. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. This gray-breasted hummingbird was encountered only once at this camp, at the edge of a clearing in the upland brush association. The specimen weighed 2.8 grams.

Anthoscenus constantii leocadiae. Pine Star-throat. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. This long-billed hummingbird was common in the dense upland brush. The testes were large, suggesting that the breeding season was still in progress; the bird weighed 7.9 grams.

Trogon elegans ambiguus. Coppery-tailed Trogon. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 18. Trogons were not uncommon in the canyons near our camp and also in the rain forest a few miles to the west. They preferred the thickets and were seemingly unafraid of man. The ova of this female were minute; the bird weighed 64.4 grams.

Trogon citreolus. Citreoline Trogon. 2 ♂♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. These birds occurred in the riparian growth along the river, but they were more abundant in the dense brush on the hillsides where they were difficult to stalk. The testes of both males were enlarged (breeding condition); the birds weighed 73 and 76 grams.

Chloroceryle americana septentrionalis. Texan Green Kingfisher. 1 ♂, 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 5-12. These small kingfishers were observed on several occasions at this locality. The testes of the male were much enlarged, but the ova of the female were small, suggesting that the breeding season was not long past. The beaks of our specimens are shorter than those of birds from the lowlands of eastern Mexico. The male weighed 37.6 grams; the female, 34.8. Seemingly this is the second record of this species for Guerrero, it having first been reported by Griscom (1937).

Centurus chrysogenys flavinuchus. Acapulco Woodpecker. 4 ♂♂, 3 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 4-12. "Yellow-headed" woodpeckers were abundant in the large trees along the river where their raucous calls were heard daily. This species was the most abundant woodpecker in the vicinity. The ova of one female were enlarged, those of the others were small; testes of all males taken were small. The weight of males varied from 64.3 to 79.2 grams; of females, 47.4 to 62.8 grams.

Balanosphyra formicivora formicivora. Ant-eating Woodpecker. 1 ♂, 20 km. SW Chilpancingo, 8000 ft., August 17. About a dozen of these birds was observed in the cloud forests southwest of Chilpancingo. The testes of this male were small (non-breeding); the bird weighed 81.4 grams.

Ceophloeus lineatus scapularis. Vigors Pileated Woodpecker. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 9. In the field this large blackish woodpecker is easily confused with the ivory-bill, but the much smaller beak and black loral and malar regions of *Ceophloeus* are good field characters. These two woodpeckers occurred in the same areas and resorted to the same corn patches to feed on the ripening corn. The ova of this female were small; the bird weighed 195.4 grams.

Scapaneus guatemalensis nelsoni. Nelson Ivory-billed Woodpecker. 2 ♂♂, 2 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 5-8. Ivory-billed Woodpeckers were observed on several occasions in the vicinity of cornfields in the hills above the river. In each instance they had been attracted to the area by the maturing corn. The gullets of all four specimens were gorged with kernels of this grain. In early August the young of the year were nearly full grown. The gonads of adults were very small; the males weighed 199 and 205 grams; the two females, 183 and 191 grams.

Xiphorhynchus flavigaster mentalis. Grayson Woodhewer. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. This species was encountered only once during our stay in Guerrero. The testes were large (breeding size); the bird weighed 53.3 grams.

Tyrannus vociferans xenopterum. Guerreran Cassin Kingbird. 2 ♂♂, 15 km. S Chilpancingo, 4300 ft., August 18, 20. Many of these dark-colored kingbirds were observed at a lagoon near our camp where they hunted for insects over the water. The testes of one specimen were small, those of the other of medium size, suggesting that the breeding season had terminated. Both birds were in an advanced stage of molt. They weighed 43.5 and 44.3 grams.

Tyrannus melancholicus occidentalis. Western Tropical Kingbird. 2 ♂♂, 2♀♀, 1 unsexed, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7-12. The Tropical Kingbird outnumbered all other tyrannids at this locality, occurring in approximately equal numbres in both the riparian and upland brush associations. The ova of the females were small, but the testes of the males were large (breeding size), suggesting that the breeding season had not yet terminated. The males weighed 35.9 and 36.4 grams; females, 30.1 and 40 grams.

Myiodynastes luteiventris luteiventris. Sulphur-bellied Flycatcher. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. This flycatcher was encountered on only one occasion during our stay in Guerrero. The bird was observed flying out from perches on top of acacias in the upland area and catching insects. The testes were small (non-breeding); the bird weighed 47.5 grams.

Myiozetetes similis texensis. Giraud Flycatcher. 4 ♂♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7-12. This tyrannid ranked third in abundance at this locality, being surpassed by *Tyrannus melancholicus* and *Pitangus sulphuratus.* The breeding season of this species at lower elevations in Guerrero seemingly is long, as adult males had enlarged testes in August and young of the year were nearly full grown. Adult males weighed from 32.3 to 33.6 grams; a young male of the year weighed 32.4 grams.

Pitangus sulphuratus derbianus. Derby Flycatcher. 4 ♂♂, 3 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7-12. Next to *Tyrannus melancholicus,* this large flycatcher was the most numerous tyrannid encountered at this locality. Most of the birds were observed in the riparian association; a few were encountered in the brushy uplands. The nesting season was still in progress on August 9, as a female with an egg covered with shell was taken on that date. The testes of all males taken were in breeding condition. Adult males weighed from 69 to 85.7 grams; females, from 71.2 to 79.5 grams.

Myiarchus tuberculifer querulus. Querulous Flycatcher. 1 ♂, 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 10-12. These small, crested flycatchers were not numerous at this locality. They seemed to prefer the dense upland thickets. The gonads were small; the bird weighed 27.8 and 27.3 grams, respectively.

Camptostoma imberbe. Beardless Flycatcher. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 600 ft., August 7. Beardless Flycatchers frequented the dense brush in the uplands in small numbers. The specimen at hand is a nearly full grown young of the year, which suggests that the species breeds in Guerrero. The bird weighed 6.9 grams.

Progne chalybea chalybea. Gray-breasted Martin. 1 ♂, 16 km. N Acapulco, 1000 ft., August 14. This bird was not uncommon along the river at this locality. Seemingly this specimen constitutes a new record for the state. The specimen is a bird of the year; it weighed 40.4 grams.

Calocitta formosa formosa. Bullock Magpie Jay. 2 ♂♂, 2 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 4-6; 1 ♂, 1 ♀, Tierra Colorada (10 km. S), 500 ft., August 3; 1 ♂, 1 ♀, El Rincon, 57 km. S Chilpancingo, 2250 ft., August 3. These large, noisy jays are conspicuous members of the avifauna from sea level to an elevation of approximately 2500 feet. They showed preference for the taller trees in the densely vegetated hillsides, where they fed in groups of 5 to 15. Young

of the year in early August were nearly full grown and could scarcely be distinguished from their elders. The gonads of all specimens collected were small. Adult males weighed from 184 to 212 grams; adult females, 192 to 225 grams. Young of the year weighed from 163 to 175 grams.

Aphelocoma coerulescens remota. Chilpancingo Jay. 1 ♂, 2 ♀♀, 15 km. S Chilpancingo, 4300 ft., August 20. These jays were common in the wooded draws and canyons near camp. They fed to some extent on the open, grassy, hillsides, gathering their food from the ground. Family groups were in evidence in August. The gonads of all specimens were small; the male weighed 93.3 grams; the females, 100 and 102.6 grams.

Heleodytes jocosus jocosus. Boucard Cactus Wren. 1 ♂, 2 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7-9. As near as I can determine from the descriptions of Ridgway (Birds N. and M. Amer., 3, 1904:524-527) these specimens are intermediate between *gularis* and *jocosus*, having characters of both races. This large wren was numerous at this locality, preferring the dense brush where it was more often heard than seen. The male had large testes (breeding size); the bird weighed 28.2 grams. The females, one a nearly full grown young of the year, weighed 24 grams.

Melanotis caerulescens effuticius. Blue Mockingbird. 1 ♂, 15 km. S Chilpancingo, 4300 ft., August 20. Several of these mockingbirds were observed in a deep, brushy canyon near our camp. The largest number observed in one day was five. The testes of this male were small; the bird weighed 73.8 grams.

Turdus assimilis renominatus. West Mexican Thrush. 1 ♂, jv., 15 km. S Chilpancingo, 4300 ft., August 18. This thrush was not uncommon in the wooded canyons near our camp. Numerous nearly full grown young of the year were noted. This bird weighed 87.6 grams.

Myadestes obscurus occidentalis. Jaliscan Solitaire. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 19. This species was encountered by our party in Guerrero on only one occasion. This bird, a nearly full grown young in spotted juvenal plumage, was taken in open, rolling terrain. It weighed 38.6 grams.

Polioptila nigriceps nigriceps. Black-headed Gnatcatcher. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. Gnatcatchers were observed occasionally at the edges of thickets of upland brush where they were feeding from the peripheral foliage. The ova of this female were minute; the bird weighed 6.7 grams.

Lanius ludovicianus mexicanus. Mexican Shrike. 1 ♂, 1 ♀, jv., 15 km. S Chilpancingo, 4300 ft., August 18, 19. Shrikes were fairly common inhabitants of the maguey-covered slopes near our camp; also, numerous individuals were observed along the highway in the semi-arid country between Chilpancingo and Iguala. Griscom does not record this species, but Hellmayr (Cat. Birds Amer., 8, 1935:315) reports two specimens from Iguala. The young bird is nearly full grown; they weighed 48.2 and 49.6 grams, respectively.

Basileuterus rufifrons dugesi. Chestnut-crowned Warbler. 1 ♂, 15 km. S Chilpancingo, 4300 ft., August 16. This brightly colored warbler was not uncommon in the thickets on the rolling terrain at this camp. The testes of this male were small (non-breeding); the bird weighed 9.9 grams.

Cassiculus melanicterus. Mexican Cacique. 4 ♂♂, 3 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 4-12. These large, crested, black and yellow icterids were conspicuous inhabitants of the riparian association near camp. Seemingly the breeding season is long and two or more broods are reared each season as nearly full grown young were taken and each of the adult females had an egg, covered with shell, in the oviduct, indicating they were laying. Adult males weighed from 99.4 to 128.4 grams; adult females, 66 to 72.3 grams.

Cassidix mexicanus obscurus. Colima Boat-tailed Grackle. 1 ♂, 16 km. N Acapulco, 600 ft., August 14. This species is locally abundant in Guerrero. It was not observed at our camp at Rio Aguacatillo, but it was common in the semi-marshy country near the coast. These birds were still breeding in August when former broods were nearly full grown. This male weighed 227.7 grams.

Icterus graduacauda dickeyae. Black-headed Oriole. 1 ♂, jv., 20 km. SW Chilpancingo, 9000 ft., August 17. Encountering this species in the cloud forests southwest of Chilpancingo was indeed a surprise. This is a bird of the year that probably was reared in the vicinity.

Icterus gularis gularis. Lichtenstein Oriole. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 7. This large yellow and black oriole was observed on two or three occasions. It probably breeds here, however, as the testes of this specimen were much enlarged. The bird weighed 84.7 grams.

Icterus pustulatus pustulatus. Scarlet-headed Oriole. 2 ♂♂, 2 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 8. This oriole was a common inhabitant of the area near our camp, particularly in the large trees bordering the river. A pair was observed constructing a nest in a tree overhanging the river on August 8. The testes of one specimen taken that day measured 12 mm. in length (breeding condition). This male weighed 41.9 grams. An adult female, containing large ova, weighed 38.7 grams.

Sturnella magna alticola. Highland Meadowlark. 1 ♂, 15 km. S Chilpancingo, 4300 ft., August 19. Meadowlarks were common inhabitants of the grassy, rolling hills near camp, as well as of the corn-

fields near Chilpancingo. This specimen is in worn, faded plumage; the bird weighed 101 grams.

Piranga flava hepatica. Hepatic Tanager. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 19. This tanager was uncommon at this locality. The ova were small; the bird weighed 39.7 grams.

Richmondena cardinalis carnea. Colima Cardinal. 1 ♂, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 12. Cardinals were not numerous at this locality, as only two individuals were observed during our stay, both in brushy areas along a small creek that emptied into the river. The breeding season probably was still on since this male had large testes. The bird weighed 34.1 grams.

Hedymeles melanocephalus maculatus. Pacific Black-headed Grosbeak. 1 ♂, 20 km. SW Chilpancingo, 7000 ft., August 7. These grosbeaks were not uncommon in the wooded mountains above an elevation of 6000 ft. where they doubtless breed. The testes of this male were enlarged, suggesting that the breeding season was still in progress. The bird weighed 44.2 grams.

Guiraca caerulea eurhyncha. Big-billed Blue Grosbeak. 1 ♂, 15 km. S Chilpancingo, 4300 ft., August 14. Blue Grosbeaks were common inhabitants of the small, brushy ravines. The testes of this male were large (breeding size). The bird weighed 34.3 grams.

Carpodacus mexicanus mexicanus. Mexican House Finch. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 20. House Finches were common inhabitants of the valley near Chilpancingo, but they were far less numerous in the vicinity of our camp. The ova of this female were small; the bird weighed only 15.3 grams. This is from 20 to 25 per cent less than the weight of birds from the states of Puebla and Tlaxcala.

Sporophila torqueola torqueola. Collared Seed-eater. 2 ♂♂, 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 19. Seed-eaters were common on the open, grassy slopes near camp. Young of the year accompanied their elders about in family groups. The gonads of all birds were small; the males weighed 8.9 grams; the female, 8.4 grams.

Aimophila humeralis humeralis. Ferrari-Perez Sparrow. 2 ♀♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 11. This black-fronted sparrow was fairly abundant in the marginal areas of dense brush along the river and near the highway. A pair was observed building a nest in a small tree near the river. The ova of the females taken were small; the birds weighed 24.8 and 25.7 grams.

Aimophila acuminata guerrerensis. Guerreran Ground Sparrow. 1 ♀, Rio Aguacatillo, 30 km. N Acapulco, 1000 ft., August 10; 1 ♀, El Naranjo, 30 km. S Taxco, 3250 ft., August 3. This species was not as common as *Aimophila humeralis* in the vicinity of our camps. It was observed only occasionally in areas of scattered brush. Seemingly it was not nesting, as the ova of these females were small. The birds weighed 26 and 32 grams.

Aimophila rufescens subvespera. Guerreran Rusty Sparrow. 1 ♀, 15 km. S Chilpancingo, 4300 ft., August 20. This large *Aimophila* was a common inhabitant of the rolling, grassy, brush-dotted hills at this locality. The ova of this female were large; the bird weighed 44.6 grams.

Aimophila ruficeps fusca. Rufous-crowned Sparrow. 2 ♂♂, jv., 15 km. S Chilpancingo, 4300 ft., August 16. Rufous-crowned Sparrows were common inhabitants of the rolling, grassy hills near camp. These young probably were reared in the vicinity. They weighed 17.8 and 20.2 grams.

Department of Fish and Game, Agricultural and Mechanical College of Texas, College Station, Texas, November 1, 1943.

ROOSTING HABITS OF MARTINS AT TUCSON, ARIZONA

By MILAM B. CATER

No published record has been found of the roosting of Martins (*Progne subis*) in large numbers throughout the breeding season, although such a roost near Tucson, Arizona, has been known locally for years. A report was made of a considerable number of martins gathering on the electric wires 6 miles northeast of Tucson in June, 1933, by Anderson (Condor, 35, 1933:204). Also, martins were observed nesting in old woodpecker cavities in the Sahuaro cactus (*Cereus giganteus*) near Tucson by Swarth (Condor, 7, 1905:49) and Vorhies (*ibid.*, 37, 1935:246).

Known arrival dates of martins in the Tucson area are lacking for 1943, although William X. Foerster observed five flying toward the northwest at sunset near the University of Arizona on May 6. Cater first observed them at sunset on May 20, when they assembled in large numbers on electric wires one-half mile west of the Santa Cruz River near Speedway Boulevard, 2½ miles northwest of Tucson. At dusk these birds left the wires *en masse*, and within five minutes all had disappeared into a grove of cottonwood trees located at a reservoir on a near-by golf course. This roost was visited on subsequent days, including May 26, when, in company with Anders H. Anderson and William X. Foerster, the number of martins was estimated at 3000. They were observed flying to the roost from all directions, the larger number seemingly from the direction of the Sahuaro National Monument, an area of giant cacti twenty miles to the southeast. The martins began arriving in the vicinity of the roost about one hour before sunset, continuing to arrive until dusk.

In the first week of June, 1943, for no apparent reason, the martins changed their roost to a grove of cottonwood trees in a house-trailer park 1½ miles north of the golf course, and one-quarter mile east of the railroad near Highway 84. This roost, according to near-by residents, was used in 1941 but not in 1942. But the martins continued to assemble on the wires in the vicinity of the golf course near the old roost, flying to the new roost just before dusk. This practice continued until the first part of July, when they began assembling on the wires in the vicinity of the new roost.

Throughout the summer months, the number at the roost, an estimated 3000, did not change noticeably, except during the egg-laying and incubating periods, which in this region begin the last week in June and continue until the last week in July. During these periods, males greatly outnumbered females, the total number being reduced according to the number of females remaining at the nests.

It is believed that martins fly from considerable distances to this common roost. They were observed on June 20, 1943, at the Palo Verde Ranch 19 miles northeast of Tucson, flying toward the roost about one hour before sunset. At that time they flew in a leisurely manner, feeding as they went. On three occasions the speed was checked by the car speedometer: it was 23 miles per hour in each case. On several other occasions, just before dark, however, small groups were observed flying rapidly in the direction of the roost.

Several times the roost was visited in the early morning at daybreak, but the martins had all departed. During June and July, at my home on Glenn Road, 4½ miles northeast of Tucson, they were heard high overhead, long before daylight, flying toward the cactus areas. On one occasion, July 19, 1943, they were heard at 2:30 a.m., Mountain Standard Time.

In an area of giant cacti, on Pontatoc Road, 8 miles northeast of Tucson, young

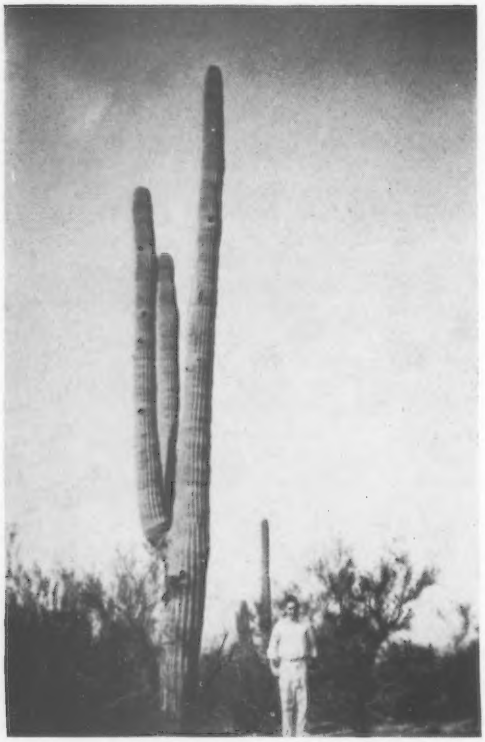

Fig. 3. Nesting site of Martins in giant cactus. Nests were placed in upper two deserted woodpecker holes. Photograph by the author.

martins were observed between August 19 and 30 making their initial flights from five different nests. For the first three or four nights they returned to their nests; thereafter they accompanied the parent birds to the common roost. By September 1 the number at the roost had increased to an estimated eight or nine thousand. This large number created unsanitary conditions by their droppings on the trailers parked near the cottonwood trees. The inhabitants of the trailers endeavored, by different methods, to force the martins to leave for another roosting place. All sorts of noise-making devices were used, but to no avail. This only caused the martins to mill about high overhead until dark, whereupon they descended quickly into the trees.

In the first week of September the martins discontinued assembling in the vicinity of the roost and began assembling on the wires near a gravel quarry one-half mile north of West Speedway Boulevard, on Silverbell Road; they flew to the roost some two miles to the northeast shortly before dusk each day. This practice continued until their final departure. By September 7, the number had increased to an estimated 10,000,

and on September 13, 11,000 were counted assembled on the wires, with possibly 2000 flying about in the vicinity, making a total estimate of 13,000 martins.

At this new assembling place the martins were drinking and bathing in a pond of water which had formed in the bottom of the gravel quarry from rains that fell in August. It should be mentioned that all feeding and drinking, as well as bathing, is done on the wing. They fly just above the surface and drop tail first into the water, immediately rising into the air, shaking and even preening themselves while flying.

As no published fall departure dates are available for the Tucson region, the martins were kept under close observation after September 13. The roost was visited daily in company with William X. Foerster. The results of these observations are as follows, all numbers having been estimated, except as indicated:

September 22, 13,000 at the roost.
September 23, 1000; the weather on this day was stormy, and the martins were dispersed.
September 24, 25, and 26, 5000 at the roost.
September 27, 4000.
September 28, 2000.
September 29, 1000.
September 30, 500.
October 1, 250.
October 2, 62 counted at the roost.
October 3, only two immature martins were seen at the roost. They were recognized as young birds from their call-notes.

Fig. 4. Martins drinking and bathing in flight at a pond in bottom of a gravel quarry. Photograph by Tad Nichols.

On October 4, and thereafter, no martins were seen. Therefore, for the Tucson region in 1943, it can be said the departure extended from September 23 to and including October 4.

In an attempt to ascertain the area that was represented at the roost during the breeding season, an estimate was made of the breeding population in three scattered areas of one square mile each. Three to five pairs were counted in each of these areas, constituting an average of four pairs, or eight birds per square mile. Calculating from the estimate of 3000 birds at the roost, it would appear that they nest in an area of 375 square miles. However, this does not include a non-breeding area of approximately 175 square miles in which is located the city of Tucson, plus adjacent areas where the giant cacti do not grow. Thus the total area utilized by the martins in the Tucson region is roughly estimated at 550 square miles.

Thanks are extended to Anders H. Anderson and William X. Foerster for their assistance in certain of the field observations and to Lyndon L. Hargrave, Edouard C. Jacot, and Allan R. Phillips for checking this report and making valuable suggestions.

Tucson, Arizona, November 19, 1943.

NOTES ON BIRDS OF THE YUMA REGION

By GALE MONSON

From July 1, 1942, to June 30, 1943, the writer was present in the lower Colorado River valley and contiguous areas in Arizona and California. Headquarters were at Yuma, Arizona, and at Imperial Dam on the Colorado River about fifteen miles above Yuma. A number of interesting observations were made in the course of the year, the more important of which are presented herewith. Grateful acknowledgment is made of supplementary data supplied by Alden H. Miller and Allan R. Phillips.

Pelecanus erythrorhynchos. White Pelican. Three were seen on July 7 and one on July 14 just below Laguna Dam on the California side of the Colorado River in Imperial County. As far as known, these constitute the first summer records for the lower Colorado River valley.

Pelecanus occidentalis californicus. California Brown Pelican. A mounted specimen was seen in the W. C. Stone general merchandise store, three miles west of Somerton, Yuma County, Arizona, on December 4. The bird was electrocuted when blown by a high wind into a power transmission line in the spring of 1941.

Plegadis guarauna. White-faced Glossy Ibis. Three were seen at Mittry Lake, an overflow area of the Colorado River in Yuma County on the Arizona side between Imperial and Laguna dams, on December 3. Three were seen in the same place on December 20. These are the first winter records for Arizona.

Ajaia ajaja. Roseate Spoonbill. This species may now be added to the Arizona state list on the basis of the following records. Mr. and Mrs. Harry L. Crockett, of Phoenix, have informed me (letter, May 11, 1943) that on July 6, 1940, they saw a Roseate Spoonbill near the east end of the Gila River bridge at Gillespie Dam in Maricopa County. The bird was feeding at the edge of the water, and since the Crocketts watched it at close range for more than ten minutes, they are certain of their identification.

In July or August, 1942 (exact date unknown), a Roseate Spoonbill was killed by a resident of Peoria, Maricopa County, near Beardsley, in the same county, about twenty miles northwest of Phoenix. The bird was mounted by a Peoria taxidermist, but the specimen was unknown to ornithology until November 8, 1942, when Mr. and Mrs. Crockett, accompanied by Warren Pulich, saw the specimen in Peoria. The Crocketts took some photographs, one of which is reproduced herewith. I am indebted to the Crocketts for these data and photographs. This is the first Spoonbill taken in Arizona.

A flock of ten Roseate Spoonbills was seen on September 30 at Mittry Lake. They were feeding in shallow water with a flock of thirty Wood Ibis (*Mycteria americana*), and were so tame that they permitted the observer to approach within seventy-five feet. Eight of the flock were adults, two were immatures.

The only previously known Arizona record is questionable; one was supposed to have been killed "about November, 1916," at the mouth of the Salt River in Maricopa County, but the bird was not preserved (Allan R. Phillips MS, *fide* Harold Moore of Phoenix, letter, February 27, 1939). However, it has been found on the California side of the Colorado River at Palo Verde, Imperial County, in July and August (Grinnell, Bryant, and Storer, Game Birds Calif., 1918:263).

Anser albifrons. White-fronted Goose. Although there are no published records of the occurrence of this goose on the lower Colorado River since Coues found it "abundant" in September, 1865 (Proc. Acad. Nat. Sci. Phila., 1866:96), it is undoubtedly of regular occurrence. Four flocks, numbering 194 individuals in all, were seen migrating south over the Imperial National Wildlife Refuge (on the Colorado River above Imperial Dam) on October 1. A single bird was seen at Imperial Dam on September 30, four at Mittry Lake on October 20, and two over the Imperial Refuge on October 25. A flock of 56 was seen at Furgeson Lake on the California side of the Imperial Wildlife Refuge, in Imperial County, on January 24. None was seen in the late winter or spring. Furgeson Lake is an overflow area of the Colorado River, as is its counterpart, Martinez Lake, on the Arizona side of the Imperial Wildlife Refuge, in Yuma County.

Mareca americana. Baldpate. A male was observed on July 3, at a small lagoon about one-half mile south of Imperial Dam on the California side of the Colorado River, in Imperial County. It was in company with eleven Redheads (*Nyroca americana*) and about twenty Ruddy Ducks (*Erismatura jamaicensis*). I am aware of no other summer records of this duck from the lower Colorado River valley. The bird was not crippled.

Fig. 5. Roseate Spoonbill taken in summer of 1942 near Beardsley, Maricopa County, Arizona. Photograph by Harry L. Crockett and Ruth Crockett.

Nyroca americana. Redhead. The presence during July, August, and September of small numbers of this duck in the vicinity of Imperial Dam, California side, led me to suspect that they nested in the locality, despite the distance from other known nesting grounds and the low, hot character of the country. This suspicion was not confirmed until June 7, when I saw two broods of young Redheads in the California Swamp between Imperial and Laguna dams (again on the California side of the Colorado River). One brood, numbering five, appeared to be about twenty days old; the other, numbering twelve, was about half that age. Each brood was with its female parent. On the same day, in the same place, a female Mallard (*Anas platyrhynchos*) was seen with a brood of eight young.

On June 20 in the California Swamp, when accompanied by Alan Forbes of Winterhaven, California, I saw another brood of young Redheads, eight in number, about three weeks old, and accompanied by an adult female.

On June 23 at Mittry Lake, I found Redheads to be common. I counted a total of sixty-two fully grown Redheads in addition to three broods of young numbering eight, nine, and nine, respectively. The young ranged from about two weeks old to one-third grown.

Buteo swainsoni. Swainson Hawk. The rarity of this bird in southwestern Arizona prompts me to record the following observations: one seen on August 5 about two miles east of Yuma, Yuma County; one seen on April 28 about eight miles west of Gila Bend, Maricopa County; and one seen on April 28 about one mile west of Dateland, Yuma County.

Buteo albonotatus. Zone-tailed Hawk. A mounted specimen was seen in the Stone store near Somerton on December 4. It was obtained near Somerton some time in 1940 or 1941.

Aquila chrysaëtos. Golden Eagle. Since there are no previously published records of the Golden Eagle from the lower Colorado River valley, the following observations are of interest: one seen just above Laguna Dam, on the California side, on November 15. Two (a pair?) were seen soaring over land adjacent to the river south of Cibola, Yuma County, Arizona, on January 23. I also have a number of records from the Castle Dome and Kofa mountains on the Kofa Game Range in Yuma County, Arizona, and from the various mountain ranges in the Cabeza Prieta Game Range in Yuma and Pima counties, Arizona.

Circus hudsonius. Marsh Hawk. A female was seen on May 17, about three miles north of Fort Yuma, Imperial County, California; this is an unusually late spring record.

Falco peregrinus. Duck Hawk. This hawk was seen in small numbers along the Colorado River, from Yuma to about forty-five miles north of Yuma, in every month save March, April, and June. However, evidence that it breeds there is lacking.

Charadrius nivosus. Snowy Plover. Three were seen at Mittry Lake on September 30, and four were seen at the same place on November 11; these constitute the first records of this species for

Arizona. Photographs were taken of those seen on November 11, but the images are too small for suitable reproduction. Two Snowy Plovers were noted on November 4 at Regan's Slough on the California side of the Imperial Wildlife Refuge a few miles above Picacho, Imperial County.

Numenius americanus. Long-billed Curlew. Two seen on June 17 at Martinez Lake, Imperial Wildlife Refuge, were present at an unusual date for the species.

Pisobia melanotos. Pectoral Sandpiper. One was seen at Mittry Lake on September 30 in company with numerous Least Sandpipers (*Pisobia minutilla*) and Western Sandpipers (*Ereunetes mauri*). This is the fourth record for Arizona, and the first published record for the lower Colorado valley.

Pelidna alpina. Red-backed Sandpiper. Five were seen at Mittry Lake on October 20 in company with about 350 Dowitchers (*Limnodromus griseus*). The only previous records for the species in Arizona are those of Scott, who "saw flocks" and "took specimens during the latter part of April, 1883, near Tucson" (Auk, 3, 1886:386).

Recurvirostra americana. Avocet. One was seen on June 23 at Mittry Lake in company with Black-necked Stilts.

Himantopus mexicanus. Black-necked Stilt. Although no evidence of breeding was found, these birds were present in the Imperial Dam area during June: one seen in the California Swamp on June 7; two seen at Furgeson Lake, Imperial Wildlife Refuge, on June 17; and nine seen at Mittry Lake on June 23.

Larus philadelphia. Bonaparte Gull. Two were seen on the California side of the Imperial Wildlife Refuge, between Furgeson Lake and Imperial Dam, on April 19.

Scardafella inca. Inca Dove. I was surprised on July 5 to see three Inca Doves in Yuma. Subsequent observations revealed that they are present and almost certainly breeding in the northwestern section of the town. This is evidence that the Inca Dove is extending its range, and it should only be a matter of time before it will be found across the Colorado River in California. Previous published records had extended the bird's range west to Gila Bend in Arizona (Monson and Phillips, Condor, 43, 1941:108-109).

Asio flammeus. Short-eared Owl. One was observed on November 27 about twelve miles south of U. S. Highway 80, in the valley between the Mohawk and Copper mountains, Yuma County, Arizona.

Archilochus alexandri. Black-chinned Hummingbird. A male seen on February 24 at the mouth of Castle Dome Wash on the Imperial Wildlife Refuge in Yuma County, Arizona, is the earliest record for the state by several days.

Selasphorus rufus. Rufous Hummingbird. A number of these birds was seen in the Agua Dulce Mountains, Pima County, and at Heart Tank in the Sierra Pinta, Yuma County, both on the Cabeza Prieta Game Range, Arizona, on March 7, 8, and 9. This would indicate an early and rather heavy spring migration through the deserts of southwestern Arizona, as has been suggested by Monson and Phillips (Condor, 43, 1941:109). These are the earliest spring records for Arizona by seventeen days. The Rufous Hummingbirds were always seen with even larger numbers of Costa Hummingbirds (*Calypte costae*).

Iridoprocne bicolor. Tree Swallow. I was rather surprised to find these swallows wintering commonly in the Yuma-Imperial Dam-Imperial Wildlife Refuge area. They appeared on July 22, when six were seen flying over the Colorado River on the Imperial Refuge, and they remained as late as May 6, on which date three were seen just below Imperial Dam, on the California side. It would be difficult to estimate their wintering numbers, but about one thousand were seen at Mittry Lake on November 11, and about the same number in the vicinity of Imperial Dam on December 26.

Progne subis. Martin. A male was seen on May 17 about three-fourths of a mile north of Fort Yuma. This is the first record for the lower Colorado River valley.

Telmatodytes palustris. Marsh Wren. This species breeds commonly in the California Swamp, at Mittry Lake, and in the newly-formed cattail areas in the lower portion of the Imperial Refuge. Young just out of the nest were observed on May 2 in the California Swamp.

Salpinctes obsoletus. Rock Wren. One was seen on the California side on the Imperial Wildlife Refuge about one mile above Imperial Dam on June 17. This would seem to be an unusual record, for so far as I know the species breeds nowhere in the immediate lower Colorado valley. However, I did note the species in the Castle Dome Mountains in Arizona on July 9, and in the neighboring Kofa Mountains on July 16.

Toxostoma curvirostre. Curve-billed Thrasher. A westward extension of this bird's known range in Arizona is found in the following records: several noted in the Castle Dome Mountains on the Kofa Game Range on July 8, 9, and 10; five noted near Cabeza Prieta Tanks on the Cabeza Prieta Game Range, Yuma County, on September 16 and 17; also noted at Heart Tank in the Sierra Pinta on the Cabeza Prieta Game Range in February and March.

Dendroica palmarum. Palm Warbler. One was seen in brush along the shore of Furgeson Lake on the Imperial Wildlife Refuge on September 22. Apparently an adult, it first attracted my attention by its tail-wagging. This characteristic, plus the white of the outer tail feathers, the prominent head markings, and the yellowish-green tail coverts, leaves no doubt in my mind as to the bird's identity. This is the second record for California, the other being its occurrence at Pacific Grove, Monterey County, October 9, 1896 (Emerson, Osprey, 2, 1898:92).

Setophaga ruticilla. American Redstart. An immature male was seen along the shore of Martinez Lake on the Imperial Wildlife Refuge on September 22.

Xanthocephalus xanthocephalus. Yellow-headed Blackbird. This species breeds commonly in the California Swamp, where a nest with eggs was found on May 2, and many young out of the nest were observed on June 7. Also nests near Imperial Dam, and in large cattail areas on the Imperial Wildlife Refuge. Not hitherto known as a nesting species in the lower Colorado River valley.

Pipilo fuscus. Brown Towhee. Extension of this bird's known range in southwestern Arizona is found in the following records: six seen in the Kofa Mountains on the Kofa Game Range on July 16; one seen about four miles southeast of Papago Well, Pima County, on the Cabeza Prieta Game Range on March 7.

Calcarius ornatus. Chestnut-collared Longspur. One was seen at Mittry Lake on October 20, the first record for the lower Colorado River valley, and many miles west of all known previous records in Arizona.

United States Fish and Wildlife Service, Havasu Lake National Wildlife Refuge, Needles, California, September 20, 1943.

HYBRIDIZATION OF HERMIT AND TOWNSEND WARBLERS

By STANLEY G. JEWETT

For many years a fine adult, off-colored male "Hermit Warbler" (no. 954 S.G.J.), collected by me at at Tillamook, Oregon, on May 10, 1913, has been in my collection. Its peculiar coloration made the bird stand out clearly among other Hermit Warblers (*Dendroica occidentalis*) in my series but not until recently did I recognize its importance. On May 14, 1942, I collected a male in similar plumage at Gotchen Creek Ranger Station in the Columbia National Forest on the south slope of Mount Adams in Washington. This bird (no. 367381 U. S. Biol. Surv.) was sent to the Fish and Wildlife Service Washington, D.C., where Dr. John W. Aldrich called my attention to the fact that it was evidently a hybrid *Dendroica occidentalis* x *Dendroica townsendi*. At my request he returned the skin to me for further study.

I have now accumulated a fairly large series of both *townsendi* and *occidentalis*, as well as data on a large number of specimens in other western collections. Thanks to the cooperative spirit of Dr. Alden H. Miller of the Museum of Vertebrate Zoology at Berkeley, California, who forwarded me specimens (nos. 83783 and 83784 M.V.Z.) for study, I now have before me four adult males that show decisive evidence of hybridization of *occidentalis* and *townsendi*. These are:

M.V.Z. 83783, ♂, North Santiam River, Linn County, Oregon, June 9, 1941, collected by Alden H. Miller.

M.V.Z. 83784, ♂, 9 miles west of Sisters, Deschutes County, Oregon, June 14, 1941, collected by Joe T. Marshall, Jr.

U.S.B.S. 367381, ♂, Gotchen Creek Ranger Station, Mount Adams, Washington, May 14, 1942, collected by Stanley G. Jewett.

S.G.J. 954, ♂, Tillamook, Tillamook County, Oregon, May 10, 1913, collected by Stanley G. Jewett.

All four specimens are in full breeding plumage. Their most striking characteristic is the fact that they show essentially the full head markings of *occidentalis*, without any sign of the mask of *townsendi* except a small black spot in front of each eye on no. 83783 M.V.Z.—just enough for a suggestion of *townsendi*. The whole forehead, crown, sides of head down to and including the malar region, and the sides of neck are clear lemon or canary yellow. The crowns of nos. 954 S.G.J. and 367381 U.S.B.S. show the normal spotting of black found in *occidentalis*, whereas the crowns of nos. 83783 and 83784 M.V.Z., show more blackish spotting, the latter specimen having an abnormal amount of black on the nape and hindneck. The green of the backs of nos. 954 S.G.J. and 367381 U.S.B.S. approaches that in *townsendi* rather closely, whereas the green in nos. 83783 and 83784 M.V.Z. is largely suppressed. Another striking character in this cross is the partial streaking of the sides which in intensity and extent in all specimens is slightly less than in *townsendi*.

Even though all of the hybrid specimens available for study show essentially the full head characters of *occidentalis*, the body characters of nos. 367381 U.S.B.S. and 954 S.G.J. are mainly those of *townsendi*. No. 83783 M.V.Z. has only a faint wash of yellow on the breast, and less green on the back than any of the other three, but it has the streaking of the sides as found in *townsendi*. No. 83784 M.V.Z. has the yellow breast and the positive streaking of the sides, but a back which is remarkably dark and in which the green of *townsendi* is largely suppressed.

The plumage of nos. 83783 and 83784 M.V.Z. suggests that hybridization has gone farther than one generation so that the characters of *occidentalis* and *townsendi* have

been further broken down and assorted. This theory is further supported when past experiences in studying the songs of these birds is recalled. Several years ago, while in the forests of hemlock and spruce near Netarts Bay, Tillamook County, Oregon, with several members of the Oregon Audubon Society, we encountered numerous singing males of both Hermit and Townsend warblers. All were feeding high above the ground and were difficult to see in the dense foliage. I well recall the difficulty we had in distinguishing the songs of some of these birds. Mrs. Jewett and I had exactly the same experience on the slope of Mount Adams in Washington during May, 1942. To further substantiate my experience, Dr. Alden H. Miller, to whom I had never mentioned the matter, wrote me under date of October 27, 1942, as follows: "Discovery of these birds in our material recalls to mind the difficulty I had in distinguishing songs of some Townsend and Hermit warblers while collecting on the North Santiam River [Oregon, in 1941]. Both species were present in the hemlocks and I wonder now if the birds themselves were not confused at times as I was with the similarity in song." Possibly some of the songs we both heard were those of hybrids. I agree completely with Dr. Miller when he says: "Of course, I am reasonably sure that the two species in the main remain separate."

So far as I am aware the hybridization of *Dendroica occidentalis* and *Dendroica townsendi* has not been reported heretofore. In fact, the hybridization of any of the western species of *Dendroica* is extremely rare.

Portland, Oregon, November 8, 1943.

SOME PLIOCENE BIRDS FROM OREGON AND IDAHO

By LOYE MILLER

The field activities of the California Institute of Technology in the Great Basin region of North America in the past two decades have added greatly to our knowledge of the Pliocene mammal fauna, but unfortunately the remains of birds have been but rarely encountered. A limited representation of the birds has, however, accumulated, and it has been made available for study through the kindness of Dr. Chester Stock. Comparative material has been loaned by Dr. Alden H. Miller, Dr. R. A. Stirton and Mr. A. J. van Rossem. Dr. Hildegarde Howard has been good enough to express tentative opinions on several of the specimens and to make helpful suggestions. Mr. E. L. Furlong, who has studied most of the deposits in the field, has also given much information. My indebtedness to these several parties is cheerfully acknowledged.

The collection contains some thirty bird bones or fragments which are determinable with some confidence and a number of others which are considered as better un-named at present. The specimens were taken in two areas, one in the Snake River valley of Idaho and one in Malheur County, Oregon. Practically all specimens were taken at or near the surface of the ground. Some had even accumulated bits of lichen and in no instance is there any surety of association as parts of a single individual. The bones are highly mineralized but the larger cavities in most of them are filled only with the friable silt-like matrix that has not been consolidated into hard mudstone. In some specimens a concreting of the matrix has taken place in a thin layer on the bone surface; presumably this was induced by the salts from the original bone. This layer is readily scaled oïf with a dental tool.

Nature of the deposits.—The physical nature of the matrix is suggestive of quiet waters. This impression is entirely supported by the vertebrate faunas thus far recovered. Beaver, otter, and mylogaulid rodents, terrapin and fish, swans, geese, stork, crane, pelican, and cormorant—all suggest an ancient lake or the marshy areas closely adjacent thereto. Only one bird bone has been determined as derived from a species not aquatic in its adaptations. That one bone is from a large eagle, but the avifaunas of most large bodies of water today include some species of eagle. Certainly there is no incongruity in adding this large raptorial species to the avifauna of a lacustrine deposit.

Age of the deposits.—For determination of the chronologic position of the several exposures, stratigraphy is of little use except for localities no. 61 and no. 62 (see beyond), where the stratum can be traced from one station to the other. Lithology and crustal movement are likewise of small value. One is thus left dependent largely upon the purely biologic criteria of correlation, and here the associated mammal faunas offer the greatest assistance. The chronology of equine evolution has become so completely known for western North America that the presence of horse remains and of slightly less diagnostic rhinoceros remains affords a fairly accurate geologic chronometer.

The stage of evolution of these mammals is definitely Pliocene. The pronghorn, *Sphenophalos*, also present, is almost strictly a Pliocene creature (Furlong, 1931). There seems therefore to be no question as to the Pliocene age of these bird remains. Wilson (1933, 1937) considers the beds to be slightly younger than the Hagerman Lake beds which are Upper Pliocene.

Mammalian species associated with the bird remains:

Synaptomys vetus Wilson
Mimomys (?) *parvus* Wilson
Ondatra idahoensis Wilson
Lutravis cf. *halli* Furlong
(?) *Ælurodon* sp.
Mylogaulus (?) *monodon* Cope

Sphenophalos nevadensis Merriam
Pliohippus near *spectans* (Cope)
Teleoceras fossiger (Cope)
Lutra sp.
Plionictis near *ogygia* (Mathew)
Dipoides stirtoni Wilson
Goniodontomys disjuntus Wilson
Hypolagus vetus (Kellogg)
Castor (?) sp.

Relation to Pacific coast Pliocene.—On the Pacific coast of California there are several Pliocene deposits that have produced bird remains (Miller and DeMay, 1942). The San Diego Pliocene at San Diego, the Third Street Tunnel in Los Angeles (Fernando Pliocene), Veronica Springs in Santa Barbara, and Sweetwater Canyon in eastern Monterey County are all salt water deposits. Kern River Divide and Kern County Oil Well, both in Kern County, are fresh water deposits. None of these California localities has yielded an avian species in common with the localities here discussed.

Other Pliocene deposits in the Great Basin area (Hagerman, Idaho) have yielded only *Phalacrocorax auritus* in common. So far as bird remains are concerned, the greatest coincidence is with Pleistocene deposits of coastal areas. This resemblance, however, is attributed to factors other than time, and greater weight in correlation is ascribed to the associated mammal faunas. For some reason, the Pliocene epoch has provided us with but little bird material. With such a limited fauna representing the group Aves, in which evolution during Tertiary time seems to have been slow as compared with mammals, geologic correlation by means of this group must be indulged in with much care.

The localities.—Bird remains in this particular collection have come from four localities. Field numbers of these quarries are as follows:

Locality 61, Owyhee Pliocene, Malheur County, Oregon. West side of Dry Creek (a tributary of Crooked Creek), and just east of the Crooked Creek Ranch. Exposures lie north of the road which crosses Dry Creek.

Locality 62, Owyhee Pliocene, Malheur County, Oregon. Along east side of Dry Creek. Same stratigraphic horizon as at locality 61.

Locality 118, Snake River, Idaho. Thirteen miles northwest of Grandview. The white beds underlie the rim rock to the north of the river where it enters a gorge.

Locality 122, on the Barbour Ranch on the south side of Snake River, Idaho, three and eight-tenths miles east of the Bruneau-Mountain Home Bridge.

All localities have the same physical character in general, the matrix is the same, the state of preservation of the specimens is likewise much the same. All are considered to represent the same stage of the Pliocene epoch.

TABULATION OF FAUNAS

		No. of bones
Locality 61	Bird, indeterminate	1
Locality 62	*Pelecanus erythrorhynchos* (?)	3
	Phalacrocorax auritus	2
	Cygnus sp.	2
	Branta dickeyi	9
	Goose, indeterminate	6
	Eagle, indeterminate	1
	Bird, indeterminate	5
Locality 118	*Grus americana*	1
Locality 122	*Ciconia maltha*	5
	Goose, indeterminate	1
	Cygnus sp.	1
	Bird, indeterminate	2

SPECIES REPRESENTED

PELECANIFORMES

Pelecanus erythrorhynchos (?). White Pelican.—Specimen number $6\frac{2}{3}\frac{4}{2}\frac{1}{3}8$. The station at Dry Creek in Oregon (locality 62) yielded the poorly preserved fragments of three large femora that appear

to be of this species. The specific assignment is left with a question mark because of poor preservation of the specimens. The size and the grosser characters so far as preserved are those of the White Pelican. There seems to be no chance of confusion with *Pelecanus halieus* Wetmore (1933) from the Pliocene of Hagerman Lake since the describer of that species states that it is "slightly smaller than modern *Pelecanus occidentalis californicus*."

Phalacrocorax auritus. Double-crested Cormorant.—Specimens $6^{2}/_{73241}$, $6^{2}/_{73242}$. Two bones from Dry Creek, Oregon, are determined as of this species. They are the proximal end of a right humerus and the head of a left coracoid. Both fragments are remarkably well preserved despite the fact that they had been exposed on the surface of the ground sufficiently long for the accumulation of small bits of lichen. They are about average in size for the species as today represented on the Pacific coast by the subspecies *albociliatus*. The species has been reported previously from the Pliocene of Hagerman Lake, Idaho, and from the Pleistocene of California, Florida, and Nevada. *Phalacrocorax idahensis* (Marsh) from the Idaho Pliocene was an appreciably larger bird (Marsh, 1870; Wetmore, 1931, 1933).

CICONIIFORMES

Ciconia maltha. Asphalt Stork.—Specimens $12^{2}/_{73239}$, $12^{2}/_{73240}$. There are three fragmentary bones that were more or less associated in the formation at Barbour Ranch on the Snake River. No. $12^{2}/_{73239}$ is a pair of coracoids and $12^{2}/_{73240}$ is the distal end of a left tibia. A fragment of a furcula and the head of a humerus may belong to the same bird. They represent a large stork not distinguishable from *Ciconia maltha* first described from the Pleistocene asphalt of California (Miller, 1910). This individual is large, but the Pleistocene birds as recovered from several localities in California and in Florida show wide amplitude of variation (Howard, 1942). Within this variable species the Snake River form would easily be accommodated. The surfaces of critical areas have been broken away in such fashion as to make accurate measurements of no value, but specific assignment is made with confidence.

ANSERIFORMES

Branta dickeyi. Dickey Goose.—Specimens $6^{2}/_{73232}$, $6^{2}/_{73233}$, $6^{2}/_{73234}$, $6^{2}/_{73235}$, $6^{2}/_{73236}$. This gigantic goose was first recognized in the Pleistocene asphalt fauna of McKittrick, California (Miller, 1924). The student interested in details of comparison with the almost equal-sized swan and with other extinct forms of *Branta* is referred to the original description of the McKittrick bird.

The species seems to have been extremely rare in the California Pleistocene, since a single bone, a perfect tibiotarsus, was the only specimen found among the many thousand bones of some seventy-six species from the type locality. The great collections from Rancho La Brea and Carpinteria afford nothing comparable to it. The Pleistocene collections from Fossil Lake, Oregon, have provided two large geese and two swans. Is it possible that *Branta dickeyi* is synonymous with any of these Fossil Lake birds?

There is no difficulty in distinguishing the swans on the basis of well marked osteological characters. Cope's *Branta hypsibata* (Cope, 1878) from Fossil Lake was based on a single tarsometatarsus which was very close to the living *B. canadensis* from which it differed in being longer and more slender. It also differed in certain osteologic characters. Cope surmises that the bird "had longer legs and probably larger dimensions" than any of the living geese of North America. *Branta dickeyi* is so definitely a giant that Cope would scarcely have used the term "probably larger" had he been describing the same bird.

Anser condoni Shufeldt of the Fossil Lake fauna was described from fragments of the furcula (Shufeldt, 1892). Unfortunately there is, in the original description, some confusion between text and figures as well as in orientation of parts and no type is designated. (There are three fragments allocated to the species.) Figures by Shufeldt indicate a bird larger than the living Trumpeter Swan and hence, presumably, it was much in excess of *B. dickeyi*. Just what the systematic position of *Anser condoni* would be if the bird were better known, is a matter of great uncertainty. I feel confident, however, that it is not to be confused with the Dickey Goose.

In the collection here discussed there were retrieved from the same locality a number of fragments that are assigned to this species. One of them fortunately is of the same element as the type, that is, the tibiotarsus. The specimen consists of the distal condyles with a short portion of the shaft. Other parts include an almost complete coracoid from the right side and a very small portion of its mate from the left, the manubrial portion of a sternum, the proximal end of a right carpometacarpus and the proximal end of a tarsometatarsus.

Three other bones of less distinctive character are a cervical vertebra, a toe bone and a fragment of a sternum. All these fragments are manifestly from anserine individ-

Fig. 6. Coracoids of *Cygnus columbiana* (left) and *Branta dickeyi* (right), x1. Photograph by Gretchen L. Burleson.

uals of about the same size as *Branta dickeyi* and all may have been from the same individual although there is no certainty of the latter point.

The coracoid referred to *B. dickeyi* is longer than that of an adult Whistling Swan (*Cygnus columbianus*) as measured from the manubrial facet to the summit of the head, although it is markedly less robust in the mid-region of the shaft. When viewed from the ventral side, the shaft rises almost at right angles to the general line of the sternal facet, whereas in the swan there is an effect of "leaning toward the median line" so that the shaft of the coracoid forms an angle that is less than ninety degrees on the axial side. The sternal facet is of different shape. Although the bone as a whole is longer, the distance from the center of the scapular facet to the crown of the head is less. This fact combined with a narrowness through the triosseal canal results in a definitely smaller head for the Pliocene bird. The scapular facet is markedly deeper despite possible postmortem corrosion. The furcular facet is more sharply marked. The coracoidal fenestra is unmarked in both species. Attachment of the coracobrachialis muscle and the sternocoracoidal muscle scars are much more pronounced in the fossil. As compared with the swan, then, we see the fossil coracoid as a longer, straighter, more slender, and smaller-headed bone.

The fragment of tarsometatarsus is so badly broken as to be of only slight service.

The corrosion of certain critical contours has rendered the micrometer useless in recording measurements; nevertheless, to the eye it is evident that we have a bone of swan size, with a resemblance to the geese.

Like the tarsal fragment last discussed, the fragmentary proximal end of a carpometacarpus is a bone of swan size with resemblance to the geese. The characters are, however, more strongly anserine and less cygnine.

The small fragment of the manubrial region of the sternum is definitely unlike that of living *Cygnus* of America in the form of the coracoidal facets and in the absence of a recess for reception of the tracheal convolution. Again we have a goose-like character.

As stated above there is no positive assurance that the specimens ascribed to *Branta dickeyi* are from the same individual. Furthermore it must be made clear that assignment to a single species is based purely on their size and their anserine characters. The proximal end of a scapula was also retrieved which is of proper size but it lacks the pneumatic foramen on the ventral side which occurs in all our living North American geese and is wanting in the swans. Another scapula the size of *Branta canadensis* has the foramen entirely lacking also. Was this foramen lacking in the Pliocene geese or are these specimens more properly to be considered as swans? Since there is a fragment of a sternum from locality 122 that is definitely assigned to the subfamily of the swans, it seems preferable to consider the two scapular fragments as swans also.

I had not seen the type specimen of *Branta dickeyi* since the initial study of it twenty years ago until it was borrowed for comparison with the Pliocene geese from Oregon. The characters set up at that time as compared with the Whistling Swan hold true in the main and to them may be added certain unmeasurable differences at the proximal end: the anteroposterior diameter is less in excess of the transverse diameter. The total length is less than in any of the swans at hand and the shaft is stouter than that of the shortest of them. On the posterior face of the bone just below the rim of the internal articular basin is an area of muscle attachment for the common extensor of the digits and the tibial head of the gastrocnemius muscle. The swans differ from the geese quite constantly in the pattern of this area. *Branta dickeyi* is distinctly allied with the geese in the nature of this attachment surface. The scar of the semimembranosus muscle is broader and slightly lower on the shaft.

Measurements of type of *Branta dickeyi* and *Cygnus columbianus*

	Cygnus, 1243, U.C.L.A.	*Cygnus*, 1381, U.C.L.A.	*B. dickeyi* type
1. Anteroposterior diameter of outer condyle of tibiotarsus	19.4 mm.	17.2 mm.	19.0 mm.
2. Anteroposterior diameter of inner condyle	24.0 mm.	20.8 mm.	21.8 mm.
3. Ratio of 1 to 2 in per cent	80	82	87
4. Transverse diameter across the condyles taken on anterior side	23.0 mm.	21.0 mm.	22.1 mm.
5. Transverse diameter across the condyles taken on posterior side	16.5 mm.	14.4 mm.	15.0 mm.
6. Ratio of diameters 5 to 4 in per cent	70	69	67

Indeterminate geese.—There are several fragments from the Dry Creek exposure that represent geese smaller than *Branta dickeyi*. They correspond fairly well in size to *Branta canadensis* and may have come from that species. On the other hand they may represent Cope's *Branta hypsibata* described originally from the Pleistocene of Fossil Lake, Oregon. A still smaller species is represented by a fragment of a humerus from Snake River, Idaho (locality 122) which might possibly represent Burt's *Branta esmeralda* (Burt, 1929) from the Pliocene of Fish Lake Valley, Nevada, but there is no way of making certain of the relationship. All these fragments are so incomplete as to make it seem unwise to make more specific assignments.

Indeterminate swans.—As stated above in the discussion of *Branta dickeyi*, there are two fragments of scapulae from locality 62 in Oregon which are considered to be the remains of swans. They are of different size. One of them is almost as small as *Branta canadensis* but both lack the pneumatic foramen found in the geese. The larger specimen approximates the size of *Cygnus columbianus*. From locality 122 on the Snake River there comes a fragment of a sternum that is suf-

ficient to show that there had been a recess in the carina for the reception of a tracheal loop such as appears in the living North American swans. These three fragments are the sole representatives of the subfamily Cygninae, but they indicate that no less than two species were present in the Pliocene.

FALCONIFORMES

Indeterminate eagle.—The present writer has come to feel of late years that any collection of bird bones from late Tertiary or Pleistocene strata that represents more than half a dozen species is almost certain to contain an eagle of some sort. The present collection seemed at first to be the exception but it was only the most superficial glance that failed to discover a distressingly meagre fragment of a large eagle tarsus. Both ends of the bone are missing. The distal foramen, the groove of the outer extensor tendon, the greater part of the metatarsal facet, and a small portion of the shaft are preserved.

The size is practically that of a large *Aquila chrysaëtos* and of a medium sized *Morphnus woodwardi*. From both these species, however, it differs in position of the distal foramen in relation to the metacarpal facet. Within the species *chrysaëtos* there is an appreciable variation of this character, but the range of such variation observed does not include the specimen at hand.

The size of this foramen also is surprisingly small—a phenomenon suggestive of a weak outer toe. Quite in contrast, the hind toe seems to have been a powerful talon, as is suggested by the long and deep metacarpal facet which strongly resembles that of *Morphnus woodwardi*. Dr. Hildegarde Howard was good enough to examine the specimen and suggest points in which it differs from *Spizaëtus willetti* of the subfossil fauna of Smith Creek Cave, Nevada (Howard, 1935). The metacarpal facet is directed less toward the inner side and the cross-section of the shaft through the tendinal groove is different. The outer margin of that groove is quite sharply defined.

Titanohierax gloveralleni Wetmore (1937), another subfossil raptor of gigantic size, was a different bird in several respects. The shaft was less tapering and the metatarsal facet was placed at a lower level. *Titanohierax* was a bird with a very long tarsus. Little more than surmise is permissible regarding shaft length in this Pliocene specimen. Such estimate on my own part would be that the tarsus was not unusually long since the foot as a whole was probably very powerful with greatly developed hind toe, although the outer toe may have been weak. Should more complete specimens of the bird become available at a later time, a new specific, if not a new generic, category would doubtless need to be set up.

GRUIFORMES

Grus americana. Whooping Crane. Specimen $^{118}/_{3231}$, Snake River Pliocene. It is perhaps excusable that no large series of skeletons of this rare bird was assembled but such as were available showed great variability, not only in size, but in osteological characters of certain parts. For example, there are at hand two specimens of the tibial condyles, both dissected from the skins of birds of unquestionable identity, yet the ratios of anteroposterior diameters to transverse diameters are markedly different. Likewise the inner condyle is relatively smaller in one specimen than in the other. Where a species approaches the orthogenetic stage we might consider as gigantism for the group, this variability is to be more or less expected. The Whooping Crane would seemingly fall within the "giant" category along with the condors and *Teratornis* of the scavenger group, the New World vultures.

The Pleistocene of Rancho La Brea (Miller, 1925) and McKittrick (DeMay, 1941) provided a very limited representation of a large crane ascribed with some reservation to the species *americana*. Wetmore (1931) reported the species from three Pleistocene localities in Florida, basing the determination upon size alone. Although a limited amount of unassociated material is available, yet all the fossil material comes from late geologic deposits representing a time lapse through which an avian species may be expected to have persisted. Assignment to a single specific category seems justified. Especially is this true of a species that shows a decline in numbers and in areal distribution such as we see in *Grus americana*. Here again one is perhaps justified in drawing a parallel with the California Condor and his kinsman *Teratornis* (Miller, 1942); the latter may have survived until early Recent time and the former seems headed for early extinction.

The Pliocene crane material in the collection here discussed consists of a well preserved tibial fragment including the distal condyles. The specimen is larger than the largest Recent specimen available, no. 1963 U.C.L.A., but is more closely like it than is the smaller Recent specimen, no. 68426 M.V.Z. There appears no good reason why they should not be considered conspecific.

A smaller tibial fragment from the Pleistocene of Rancho La Brea, F 569, preserved in the Los Angeles Museum, is intermediate in size between the Pliocene specimen and the larger Recent bird. The accompanying table records the measurable characters of the several specimens discussed.

Measurements in millimeters of tibiotarsi of *Grus americana*

	68426	1963	F 569	118
Transverse diameter through condyles	22.4	23.6	25.2	25.5
Anteroposterior diameter through condyles	20.0	23.1	24.6	26.5
Anteroposterior diameter through notch	11.2	12.6	13.2	15.0
Transverse diameter of shaft	10.1	11.8	12.9	.....

Species of the genus *Grus* are now known from North American deposits as follows:

1. *Grus* (*Aletornis*) *nobilis* (Marsh) from the Eocene of Wyoming, one-third smaller than *G. canadensis*.
2. *Grus nannodes* Wetmore and Martin, from the Pliocene of Kansas, smaller than *G. canadensis*.
3. *Grus proavus* Marsh from the Pleistocene of New Jersey, nearly the size of *G. canadensis*.
4. *Grus canadensis* (Linnaeus) from the Pleistocene of California. The Recent species is also recorded from the Pliocene of Nebraska and Pleistocene of Florida by Wetmore. *Grus minor* Miller is a synonym of *G. canadensis*.
5. *Grus conferta* Miller and Sibley from the Pliocene of California, size as in *G. americana*.

There is a possibility that the tibial fragment here discussed may be conspecific with Miller and Sibley's *G. conferta*, but those authors (1942) found marked osteologic characters of the tarsus which even suggest generic separation from the typical cranes. No such divergence is recognizable in the tibia in hand. It seems wiser therefore to record it as belonging with the genus and species of the living bird.

SUMMARY AND CONCLUSIONS

A collection of about thirty bird bones from eastern Oregon and western Idaho was examined with the following results:

1. The age is considered to be Upper Pliocene and slightly younger than Hagerman Lake, Idaho.
2. There appears to be no correlation with other Pliocene avifaunas in the Great Basin or in coastal California.
3. The avifauna supplements the mammal fauna in that it indicates a lacustrine deposit.
4. Five species are identified with confidence, four others are discussed without specific allocation.
5. Three of the species are still living in North America.
6. *Grus americana*, *Branta dickeyi*, and *Ciconia maltha*, previously recorded from the Pleistocene are here made known from the Pliocene.
7. The coracoid of *Branta dickeyi* is described and the type (tibiotarsus) is reviewed.
8. The longevity of avian species as known from the skeleton is emphasized.

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University of California at Los Angeles, September 6, 1943.

FROM FIELD AND STUDY

Vaux Swifts in Late Summer in South Pasadena, California.—On July 31, 1943, the writer together with several other observers saw at least four swifts, apparently Vaux (*Chaetura vauxi*), flying low over the trees and houses overlooking the Arroyo Seco in South Pasadena, Los Angeles County, California. The time was just at dusk and the birds chattered noisily, often chasing one another or sailing close together with wings at a sharp dihedral angle. On August 2 I found their roosting place, a two and a half story chimney, the flues of which were of fire-type terra cotta pipe. On each of several visits in the next two weeks all four swifts were seen flying noisily about over the area for 3 to 10 minutes before settling into the chimney at about one-half hour after sunset. None was ever seen on any mid-day visits.

At least two of the birds seen in early August had one or more remiges missing from each wing, but they gradually regained the complete wing outline by mid-September. Several worn flight feathers and one spine-tipped rectrix were retrieved from the hearth below the roost on August 9; these later were compared with specimens of *C. vauxi* and *C. pelagica* by Mr. George Willett of the Los Angeles Museum and found to be the former, as was to be expected. A thorough examination of the roost chimney with flashlight and mirror on August 10 revealed a considerable number of droppings but no evidence of a nest, the possibility of which had been considered since the birds were present several days in advance of the previous earliest fall date listed for southern California (see Willett, Pac. Coast Avif. No. 21, 1933:95).

The swifts' calls, at first a vigorous and very rapidly repeated *chipper-chipper-chipper* (almost a trill), became less frequent and were not heard after September 3. On this date also, only three birds were seen and on subsequent visits on September 10 and 22 only two were noted; these always dropped into the chimney almost simultaneously, as did two (the same two ?) of the four present during August. All were gone by October 3.

Because these swifts were present so regularly at the same roost and because their behavior was so markedly different from that of other Vaux Swifts seen in southern California, the writer believes they were not merely migrants. Needless to say a careful watch will be kept in 1944 for any reoccurrence.—Howard L. Cogswell, *Pasadena, California, November 24, 1943.*

Additional Records of the Chat in Marin County, California.—In the November issue of the Condor for 1934 (p. 237) I reported trapping a Chat (*Icteria virens*) on the morning of August 15, 1934, at our bird-banding station at Manor, Marin County, California. This bird, then an immature, is still alive in our large aviary and its sex is as yet undetermined, although, from its song, we believe it to be a male.

Parenthetically, it may be stated that in this species, as in many other species where the sexes are very nearly alike, the few external indicators of sex are quite variable under conditions imposed by captivity; color evanescence and similar factors make the accurate sexing of live birds exceedingly difficult, if in most cases not entirely impossible. Then, too, in *Icteria*, mimicry is a fine art in both sexes which circumstance tends to eliminate song as an indication of sex.

Since the taking of the above individual, we vainly sought further migrant chats in Marin County until July, 1942, when Mrs. Kinsey observed a single bird skulking through the shrubbery on the grounds of our home. Every effort was made to trap this bird and although it was seen momentarily twice on the succeeding day, it then disappeared. Our captive chats were still in full song and it is our belief that this particular migrant was attracted to the immediate vicinity by the vocal efforts of the pair in the aviary. At no time, however, did Mrs. Kinsey hear the wild chat utter even a call note, let alone sing, which is somewhat unusual considering the time of year and the other attendant circumstances. Because of the unsatisfactory glimpses of this bird, it was felt that the recording of the second occurrence of this species on our grounds should be held in abeyance, pending a more positive reoccurrence.

This has now taken place, for in the late afternoon of September 29, 1943, we trapped an adult chat, taken this time in a water trap. From all appearances, it is an old female; the coloration, the shape and width of the bill, the scaling on the legs, eye ring, etc., are all indicative of considerable age. It is now being accustomed to artificial food and is already quite fearless and steady in captivity.

Thus we now have two positive fall records of the chat for Marin County and one sight record for mid-summer. We have never seen or heard this species in the County on any of our numerous trapping or field trips, nor have we any records of them for Manor other than the three mentioned here. Oddly, they occur in limited numbers in Sonoma County to the north; we have seen and heard them at the towns of Glen Ellen and Sonoma.—Eric Campbell Kinsey, *Manor, Marin County, California, October 2, 1943.*

A Record of the Sabine Gull at Berkeley, California.—The Sabine Gull (*Xema sabini*) is a common late summer migrant in northern Puget Sound and off the coast of Washington, Oregon, and California. It has rarely been recorded from shore or inland waters of California. Grinnell and Wythe (Pac. Coast Avif. No. 18, 1927:43) list four records for San Francisco Bay; one in late April, one in May and two in October.

On August 21, 1943, I watched an immature bird of this species as it patrolled the water near the Berkeley Pier, Alameda County, California. When first seen, it was about a quarter of a mile from shore, although most of its activities were carried on farther out. Twice it was seen to pick small pieces of sardine bait from the water and once it attempted to seize the bait from my fishline. On August 22, Dr. Alden H. Miller saw what was presumably the same bird at the same locality. It was not seen on August 25 or on visits on subsequent dates.—WALTER W. DALQUEST, *Museum of Vertebrate Zoology, Berkeley, California, September 25, 1943.*

A Creeper Foraging on Palm Trees.—This morning, as I was walking from my home to the street car, in a built-up residential section of San Diego, California, I was surprised to see a Creeper (*Certhia familiaris*) characteristically hitching itself up the gray trunk of one of the feather palms (*Cocos plumosa*) with which the street is bordered. I watched it for several minutes, sometimes at a 12-foot range, as it industriously explored one tree after another, traveling with equal ease up either the trunk or the even smoother stems of the leaves. On two occasions it took "in its stride" telephone poles which were set in line with the trees. It seemed to find food to its liking in the fibrous mass from which the palm leaves grow and also beneath the cross-arm of one pole.—CLINTON G. ABBOTT, *Natural History Museum, Balboa Park, San Diego, California, November 16, 1943.*

White-throated Swift Breeding with Cliff Swallows at Berkeley, California.—On April 1, 1943, a pair of White-throated Swifts (*Aëronautes saxatalis*) appeared on the University of California campus, Berkeley, California. With a group of Cliff Swallows (*Petrochelidon albifrons*), only 15 in number on that date, they milled about the nesting site of a swallow colony established now for eight years on the Life Sciences Building (see Grinnell, Condor, 39, 1937:206).

On April 2, the swifts were observed to fly repeatedly into crevices or niches in a molding approximately 45 feet above the ground on the south side of the building, where most of the swallow nest-urns were placed. Once a swift entered one of the swallow nests, remained there a few seconds, then left. For the following month, the swifts were usually in evidence at least during the sunnier, warmer portions of clear days. On certain days they appeared only for brief periods in mid-afternoon; on a few scattered, single days, they apparently were absent.

On May 2, three swifts were seen flying about the top of the Campanile situated about 400 yards east of Life Sciences Building. Wythe (Bird-Lore, 26, 1924:198) reported an observation of two swifts flying about this tower on April 9, 1924.

After May 2, a pair of swifts was present regularly in the colony of Cliff Swallows on Life Sciences Building. One observer on May 4 and another on May 13 reported hearing the notes of White-throated Swifts near the swallow colony after dark, between 8:30 and 9 p.m.

The nesting site of the swifts was finally found on May 17. It was situated in one of a series of niches between blocks spaced about four inches apart under a ledge, the whole forming the ornamental molding mentioned above. The niche, nine inches in depth, was open outwardly and downwardly. At the inner end, a mud-shelf remnant of a Cliff Swallow's nest, resting on a narrow, rounded molding under the blocks, formed the ledge on which the swifts' nest was placed. Both swifts were seen flying to and from the nest site. Remnants of other Cliff Swallow nests as well as empty, whole nests were present in neighboring niches. There were several occupied swallow nests within two or three feet of the swifts' nest.

On the days that followed, usually but one swift was seen flying among the swallows. There were long periods each day when the swifts were not in evidence, and judging by their flight routes, they spent time foraging somewhere eastwardly in the near-by hills. On May 31, between 5:00 and 5:15 p.m., one swift was observed several times flying to the nest, possibly bringing food to the other bird on the nest. Each time the swift approached the nest, the characteristic shrill chatter was given. When both birds were present at the nest, a different note was produced—a resonant *kwee-urr, kwee-urr,* occasionally modulated.

For a period of a week or so preceding May 31, with the onset of the summer fog season, the sunny portion of each succeeding day was reduced gradually. The swifts became less and less in evidence. After May 31, the nest was deserted. Examination of the nest-site was not attempted.

Two White-throated Swifts were reported flying about the south side of Life Sciences Building

on July 23. It is possible that this was the pair nesting there earlier. That this was only an incidental occurrence of the species seems clearly attested by the fact that several observers were present on the campus throughout the summer; any swifts present over an extended period would have been detected.

In the vicinity of the coast, the northern breeding limits of the White-throated Swift are reached in the San Francisco Bay region. This swift probably breeds regularly in the Mount Diablo region, Contra Costa County (Grinnell and Wythe, Pac. Coast Avif. No. 18, 1927:93). It may also breed on Rocky Ridge, east of Moraga, Contra Costa County (Bryant, Gull, 15, June, 1933:3, and 17, June, 1935:3) and in the Livermore Valley, eastern Alameda County (Crum, Gull, 11, June, 1929:3). Nests have been located in Santa Clara County (Linsdale, Aud. Mag., 43, 1941:400). From areas closer to the outer coast, there are two recent reports of nesting localities: Devil's Slide (Linsdale, Bird-Lore, 41, 1939:*262*) and Rockaway Beach (Andresen, Condor, 45, 1943:201), both in San Mateo County. In the East Bay municipalities, Alameda County, other than the above record from Berkeley, there was a breeding colony of swifts in Leona Canyon, Oakland, from at least 1927 (Kelly, Gull, 9, December, 1927:2) to 1937 or 1938 (letter, M. Vincent Mowbray). The White-throated Swift is known to nest with Cliff Swallows at Capistrano Mission in southern California (F. M. Bailey, Condor, 9, 1907:169, and Skinner, *ibid.*, 35, 1933:241). In areas where swifts are numerous, their nests are frequently grouped in colonies (Hanna, Condor, 11, 1909:77, and Little, *ibid.*, 21, 1919:235).—FRANK A. PITELKA, *Museum of Vertebrate Zoology, Berkeley, California, December 3, 1943.*

Grus canadensis from the Pleistocene of Illinois.—While visiting some commercial gravel pits near Ashmore, Coles County, Illinois, the writer was fortunate in finding the distal end of a radius of the Little Brown Crane (*Grus canadensis canadensis*), the second known occurrence of this species in the Pleistocene deposits of the central states. This fragment was lying near the top of a stratum of alluvial gravel and was overlaid by black earth. These two members, representing a more or less continuous deposit of post-Shelbyville age, are the last of a series of gravels and clays deposited in a valley floor by a shallow meandering stream in its later stages.

Recent faunal forms have been recovered from the black earth, and both Recent and extinct forms, including the only avian representative, the Wild Turkey (*Meleagris gallopavo*), have been obtained from the alluvial deposits (Galbreath, Geol. Ser., Field Mus. Nat. Hist., 6, 1938:303-313). The presence of the Little Brown Crane in this faunal group is in no way contradictory to the environmental picture indicated by the associated flora, invertebrates, and vertebrates.

I am indebted to Dr. Alexander Wetmore for verification of the identification of the specimen, which has been presented to the Field Museum of Natural History, Chicago, Illinois.—EDWIN C. GALBREATH, *Springfield, Illinois, December 9, 1943.*

Uncommon Birds of the Boulder Dam Area, Nevada.—In the course of a recent field trip along the northern arm of Lake Mead near Overton, Nevada, Mr. Victor H. Cahalane and the writer observed several birds which, according to the check-list of this area, are either uncommon or have not previously been reported from this region.

An immature Little Blue Heron (*Florida caerulea*) was seen at the edge of Lake Mead on November 13, 1943, and was noted again on the following day. So far as is known this is the first record of this bird for the Boulder Dam area.

A Lesser Yellow-legs (*Totanus flavipes*) also was observed on November 13. Although this is the second record of this bird for the Recreational Area, it is the first for the Nevada section of it.

Other uncommon birds seen included a Snowy Egret (*Egretta thula*), Lesser Scaup Duck (*Nyroca affinis*), and a Golden Eagle (*Aquila chrysaëtos*). The latter bird was perched on the top of a dead cottonwood tree about two hundred yards back from the edge of the lake. Upon our approach the eagle flew off over the water, its flight being marked by an immediate and prolonged uproar from a number of Blue Herons (*Ardea herodias*) on the sand bars bordering the lake.—GORDON C. BALDWIN, *Boulder Dam National Recreational Area, Boulder City, Nevada, November 17, 1943.*

Additional Records of the Green Heron in the Puget Sound Basin.—Through the kindness of Mr. and Mrs. William H. Luhr of Nisqually the writer recently obtained a fine adult male Anthony Green Heron (*Butorides virescens anthonyi*), apparently the third of this species to be taken in the state of Washington. The specimen, now no. 1146 of my collection, was killed on May 13, 1943, as it foraged at the edge of McAllister Creek estuary on the Nisqually tide flats in Thurston County. Considering the date of capture and the gonad enlargement, it seems evident that this bird was, or would shortly have begun, nesting in this area. The testes measured: left, 21.7x7 mm.; right, 19x9.

The bird was in good flesh, fat generally, with notably heavy subcutaneous deposits over belly and rump. Stomach contents: a disintegrated mass containing hard parts of a shrimp (*Crago* sp.), elytra of two small beetles, the caudal peduncle of a tiny fish, and a few bits of wood.

In a previous note (Slipp, Condor, 44, 1942:35-36) it was thought likely that the Green Heron might be in the process of extending its breeding range to the Puget Sound region, although at that time authentic records were limited to fall juveniles which conceivably could have moved northward from nesting areas in western Oregon. Through the interest and cooperation of Mr. Charles R. Foster, of the state trout hatchery near Steilacoom, Pierce County, Washington, yet another fall juvenile has recently come to hand (1163 J.W.S.), a male with remnants of the natal down still adhering to the tips of feathers on the crown and at the bases of the legs. The bird was flushed from one of the rearing ponds on September 8, 1943, and shot by Mr. A. G. Manion in pursuance of the predator control program of the hatchery. Mr. Manion stated that he had seen this bird, on another like it, about the hatchery lake on August 16 and 19.—J. W. Slipp, *Tacoma, Washington, October 14, 1943.*

Unusual Records from Boulder County, Colorado.—The following observations constitute important additions to our knowledge of the birds of Boulder County, Colorado.

Coccyzus erythrophthalmus. Black-billed Cuckoo. Both Yellow-billed and Black-billed cuckoos are rare along the eastern foothills of the Rocky Mountains. The former, however, is seen practically every year at Boulder, whereas only two records, both recent, are available for the Black-billed. On May 19, 1942, I saw a bird readily identifiable as a Black-billed Cuckoo on the University of Colorado campus. Attempts to locate the bird later failed. This year, however, an adult female was collected. This individual was found on June 10, 1943, in a coal chute at the University heating plant by S. R. Colson. It is now no. 4247 in the bird and mammal collection of the University of Colorado Museum. It is the first specimen taken in the Boulder region, but Niedrach and Rockwell (The Birds of Denver and Mountain Parks, Denver, 1939) give three records for the Denver region: July 10, 1910, and July 30, 1911 (Lincoln); and June 10, 1924 (Hendee).

Tyto alba pratincola. Barn Owl. The status of the Barn Owl in this region is somewhat uncertain. Although there is little evidence for nesting, the bird has been considered a possible resident. Dates of observation locally are, however, all from winter months. There are but two published observations for Boulder County, both sight records of apparently the same bird at the same location, seen by N. deW. Betts on October 31 and November 7, 1909 (Univ. Colo. Studies, 10, 1913:195). Recently two Barn Owls were found dead, both in an area of low sandstone cliffs known locally as White Rocks, six miles northeast of Boulder. The first of these was found by Malcolm Jollie, November 27, 1941; the second, a male, no. 4089 in the University of Colorado Museum, was found on December 27, 1941, by Dale Denham and Richard Pillmore.

Hesperiphona vespertina brooksi. Western Evening Grosbeak. The occurrence of this bird is unpredictable. Some years it is rare; but flocks totalling hundreds of birds were seen in Boulder from September 21, 1941, to June 5, 1942, with observations in every winter month. The species was again observed, although less abundantly, in the winter of 1942-1943 and in the succeeding spring. It has been assumed that the species would eventually be found nesting in the region, but the only published record suggesting breeding has been Dille's observation of young birds at the edge of the plains and in the foothills about eight miles north of Boulder, as reported by Henderson (Univ. Colo. Studies, 6, 1909:235). These young birds were seen in August and September, 1904. Dille also reported a nest near Estes Park, Larimer County. Young birds have again been reported during the past summer, this time in Boulder. Donald J. Magoon saw one with adults at his home in Boulder, July 26, 1943; Malcolm Jollie and Verna Mace observed an adult feeding young birds on the University of Colorado campus, August 6; Owen France saw two or three young birds near the University campus, August 20; on August 15 I saw and heard several of the grosbeaks at a distance, in Boulder, but could not be sure that any were birds of the year. These four records constitute the only summer records for Boulder, and the only summer records for the county since 1904. Although no nest was found, these observations definitely suggest that during the past summer this species was again nesting in this region.—Gordon Alexander, *University of Colorado, Boulder, Colorado, December 2, 1943.*

NOTES AND NEWS

For a long time systematists and students of distribution have felt the need of a check-list of Mexican birds. Indeed, in the past eight years two presidents of the American Ornithologists' Union have urged, through the Research Committee, the preparation of such a list. While large collections of Mexican birds existed in museums on this side of the water, as well as in England and continental Europe, none of them contained a sufficient number of specimens with adequate modern data to make it possible to determine the distribution of so huge an avifauna. However, during the past few years large new collections have been made under the auspices of various public and private American museums. Preliminary work on a check-list has been in progress for some years by the chairman of the undersigned group, which has now agreed to push the work to completion. Nevertheless, publication should not be expected at an early date.

As this will be the first check-list of Mexican birds, we fully realize it may contain many errors and a revised edition may soon be required. In fact, we are properly conscious that one of the chief results of this work will be the opportunity it will give to all interested persons to point out imperfections and additional facts, so that a subsequent edition may be a great improvement. It is hoped that all workers in the Mexican field will cooperate with the undersigned. As soon as a preliminary draft of the manuscript is ready, criticism will be invited. All correspondence should be addressed to the chairman.

Due to the amount of new material available, it is hoped that it will be possible to give, with some attempt at detail, the distributions of many of the forms, but where this is not possible, definite statements to that effect will be made. For common names both English and Spanish will be employed. The undersigned are much pleased that Dr. Rafael Martin del Campo of the Instituto de Biologia of Mexico City has agreed to supply the Spanish names, a task he is better qualified to undertake than anyone else. —HERBERT FRIEDMANN, LUDLOW GRISCOM, and ROBERT T. MOORE, *Chairman*.

To western bird banders and members of the Cooper Ornithological Club, Eustace Lowell Sumner was known as the helpful senior adviser of anyone interested in trapping and marking birds. Perhaps few were aware that he had in his youth been a bird student—an interest dating back to his childhood at the family home in east Oakland, California, near the present site of Mills College. Here a fundamental knowledge had been gained through the traditional stimulus of bird-egg collecting.

Sumner was born on July 10, 1871, in Cambridge, Massachusetts, the son of Arthur Sumner and Mary Augusta (Upton) Sumner. The family which included his brother, Francis B. Sumner, came to California when Eustace was three years of age. In 1884 they went to Colorado Springs, Colorado, and here Eustace spent part of his teens, and later, after schooling in Minneapolis, returned to engage in business. The years from 1905 to 1920 were spent in New York, with a position as advertising editor of the periodical Marine Engineering. Even while occupied with his business, he sustained his liking for birds and taught his son, E. Lowell Sumner, Jr., to study them in the field.

Failing health induced Eustace Sumner to leave New York in 1920, and, after two years in Rhode Island, he brought his wife and two children, Lowell and Margaret (now Mrs. Henri L. Albee), to Pomona, California, in 1922. Shortly following the death of his wife in 1928, he moved to Berkeley. Then began a devoted service to bird banding and thence until his death on October 1, 1943, he gave largely of his energy to ornithology.

In this period, his one aim seemed to be to help and befriend others. He served as President and for several years as Business Manager of the Western Bird-Banding Association, issuing bands for emergency needs, mailing traps and sponsoring permits for beginners. The last two annual indexes for the Condor were prepared by him. He banded birds assiduously in Strawberry Canyon in Berkeley, at his son's ranch in San Mateo County and most recently at the Hastings Natural History Reservation in Monterey County. Outstanding banding records occasionally were reported by him in the Condor and in bird-banding journals, but more importantly, his efforts went into the accumulation of data for extensive reports by Erickson, Blanchard and Linsdale, to cite only a few. If any of us needed birds captured for observation, experimental release or color marking, Sumner willingly lent a hand. Through all this time illness took his strength, but dauntlessly he continued, ever cheerful, illuminated by a fine sense of humor. He was a delightful gentleman.—ALDEN H. MILLER.

Donald Atherton Cohen, a pioneer member of the Cooper Club, died on August 19, 1943, at his farm on Kelly Hill, Hayward, Alameda County, California. Born on April 17, 1870, at Fernside Park, Alameda, he was the son of Alfred A. Cohen, attorney, and Emily (Gibbons) Cohen, daughter of Dr. Henry Gibbons of San Francisco. His father's fifty-room mansion has long been razed and the oak-shaded acres of the home place have become a city park, but where

he loved to see the shorebirds at the water's edge, bird students still meet to watch the migrating flocks swing in to rest and feed.

Educated in New York and Europe, Donald Cohen returned to Alameda to find a business career distasteful. In 1926 he bought a ten-acre ranch, "Mystery Farm," just outside of the town of Hayward, and here he devoted his spare time to increasing his already large collection of study skins, nests, and eggs of birds, presided over by a mounted Condor, with out-stretched wings, which he had bought, freshly-killed, as a boy and had carried down Market Street in San Francisco, slung over the handle bars of his bicycle.

In the 'nineties Donald Cohen's part in Californian ornithology was an active one. His portrait appears on page fourteen, volume one, number one, of "The Osprey," as editor of the "California Department," a section modestly intended to include contributions from all ornithologists living "west of the Rocky Mountains."

When the "Nidiologist" ceased publication, minutes of Cooper Club meetings were officially transferred to the California Department of the Osprey. For a time this was a satisfactory arrangement, but with the migration of the Osprey from New York to Washington, under the management of Elliott Coues, the space allotted to the Cooper Club was sharply cut. This spurred members of the young organization to venture upon the establishment of a magazine of their own—the "Bulletin of the Cooper Ornithological Club," later renamed "The Condor." Donald Cohen served as Northern Division business manager from January, 1899, through January, 1901. His contribution to California ornithology includes some fifty-three titles, the first appearing in 1893, the last, an article on the nesting of Prairie Falcons in the Mount Diablo region, in the Condor for September, 1903.—HILDA W. GRINNELL.

PUBLICATIONS REVIEWED

With the appearance of the second part of Mrs. Nice's life history study on the Song Sparrow (Nice, Margaret Morse. 1943. Studies in the Life History of the Song Sparrow II: The Behavior of the Song Sparrow and Other Passerines. Trans. Linn. Soc. N.Y., VI:viii + 328 pp., frontis. + 6 figs.), students of bird behavior are provided with a guide and source of outstanding breadth and significance. Although it is stated in the foreward that this work is "primarily a treatise on the behavior of passerine birds with the Song Sparrow as the chief example," there are numerous references to birds of other orders, some to reptiles, fish, and mammals, and a few even to invertebrates. Seven years' field work on the Song Sparrow, field studies of other passerines, observations of a series of hand-raised birds, and an extensive survey of the literature constitute the background of this book. Mrs. Nice presents many new data, elaborates certain parts of her first volume on the Song Sparrow, and brings together many examples and bits of information of unsuspected value from scattered sources in the abundant ornithological literature. This material is analyzed and interpreted in the light of basic biological principles and fundamental concepts of bird behavior to a degree unmatched by any earlier American avian life history study. Those concepts of behavior developed by Lorenz provide much of the theoretical framework about which the data are organized.

There are twenty-two chapters, each highly organized and divided into numerous parts following a detailed outline in the table of contents. The first introduces basic concepts and viewpoints in the field of bird behavior; important, chiefly contemporary, contributors and their subjects of study are mentioned. The next five chapters take up development of the Song Sparrow in terms of five different stages applicable to passerines at least; activities which make their appearance in the course of these stages are described. There follow discussions of each specific activity, innate and learned behavior, age of fledging and independence, and the young bird after dependence. It is in these chapters that the greater part of the original data is presented; it is here that the greatest contribution of this volume to biology is made. Succeeding chapters dealing chiefly with the Song Sparrow take up society in fall and winter, song, intraspecific relations, and enemy recognition. The remaining chapters are compilations of literature with original data on the Song Sparrow entering more or less secondarily; subjects discussed are awakening and roosting, territory, song in female birds, pair formation, nests and eggs, and care and defense of young. The last chapter on innate and learned behavior in the adult presents interestingly, but too briefly, certain basic implications of this and other correlated studies. There are five appendixes including tables of call-notes and dominance reactions, selected case histories on dominance, mating, and pre-mating behavior of females, and a list of species in which "injury feigning," better termed "distraction display," has been reported. The bibliography, including over 700 titles, provides for students and researchers a fairly comprehensive working list of published papers. Two indexes, one to subjects, the other to species, augment appreciably the usefulness of this book.

The highly organized topical outline mentioned above is carried over into the text, and pages with three or four centered topic headings are not uncommon. This together with an evident effort to economize space and words makes at

times for a disconnected style. The impression of choppiness is unjustly strengthened by frequent shifts in size of type and variations in spacing of lines, many of them without any change in the nature of the text. This volume is not as neatly printed as is the preceding volume. These, however, are points of mechanics that do not alter the significance of the contents. Each chapter closes with an itemized, comprehensive summary.

Throughout the discussions, there are numerous thought-provoking and suggestive comments. Occasionally the literature pertaining to certain questions is not treated beyond a mere summation; at other times conclusions are confined to quotations from other workers; usually, however, the author adds her own interpretation and opinion. Numerous opportunities for the active field observer are revealed. For instance, song in the Brown Towhee (p. 147) bears further investigation. There is some doubt that "permanently mated males do not sing"; moreover, the fact of a second, soft, finch-like song in this species has gone unnoticed. In the treatment of nest sanitation (p. 237), no mention is made of such species as the Green-backed Goldfinch which does not remove fecal sacs and allows excrement to accumulate on the rim of the nest. Without doubt, the suggested hormonal explanation of territorial behavior (p. 97) was not intended to apply generally. Among thrushes, for instance, the Robin is unaggressive in winter, or at the time of reduced levels of sex hormones, and flocking is generally the rule; the Hermit Thrush is aggressive in winter, individuals remaining solitary and even performing a warning display when intrusion on feeding areas by other thrushes takes place. Numerous questions are brought up by the table of learned and innate elements in adult Song Sparrows (p. 267); if, for instance, *quality* of song in this species is learned and not innate, to what extent is it so in other species? The matter of primitive culture among birds (p. 268), or the transmission of knowledge from generation to generation through unconscious teaching, is an intriguing field almost unexplored.

The impetus offered to students of bird behavior by this work will, I hope, carry to all ornithologists who have any occasion to write concerning matters of life history. When Mrs. Nice states (p.69) that she was "impressed with the unreliability of much of" the American data on weights of adults, length of incubation, part taken by each sex, and length of fledgling period, we are reminded that the quantity of ornithological literature in this country is quite out of proportion to its scientific worth. There is room for improvement of published, "factual" data. Moreover, papers and books by Lack, Tinbergen, Huxley, Fisher, and Armstrong, as well as Mrs. Nice's two volumes, are generally available; the treatment of any avian subject antedating these in theoretical aspects is inexcusable.

As time passes by, it is, of course, the original data in Mrs. Nice's work which will become increasingly valuable; the survey of literature, important and valuable as it is now, will be less so in the future. After a study of this and other modern behavior studies now in print, one may ask to what extent does the vast literature need to be re-organized and re-assimilated when a major life history study is prepared for publication. Some contemporary leaders in this field feel that a thorough summary of the literature is indispensable to a scholarly written treatise of one species. Certainly the student of avian life history will want to read widely; he will want to know the numerous questions which may be answered at least partially by his data. He may want to review the available information on closely related species and support his stands by citing pertinent examples perhaps from a variety of species. Published, original data, if handled according to recent methods and concepts, are no less valuable without a long series of cited references. Specific problems, such as pair formation, can be reviewed whenever the need for re-examining the accumulated evidence arises; here the author is obligated to organize the literature comprehensively.

Because so much material is included and condensed in Mrs. Nice's book, the beginner may be left with the erroneous impression that the citations from literature offer established facts when actually many of them are open to further study. Her "view point is fundamentally that of Lorenz, Heinroth, and Tinbergen" (p. 4), and her interpretations in terms of this viewpoint do not confirm necessarily the validity and adequacy of the concepts of these men. Further researches in the fields of animal behavior and psychobiology will undoubtedly offer concepts that may alter, elaborate, or even supersede those of Lorenz and others. Mrs. Nice offers significant critical comment when, for instance, she discusses Lorenz's classification of pair relationships (p. 204) and when she points out (p. 93) that despite the extensive laboratory studies of social and peck-order relations in the domestic hen, "it is a question as to how social a bird *Gallus domesticus* really is." It is surprising to see Dawson's and Pearson's anthropomorphic explanations of the function of song (p. 146) accorded the honor of "early theories." A lengthier discussion of the basic psychobiologic concepts in the first chapter would have been useful; does the author, for instance, really regard "imprinting" as a "kind of conditioning" (p. 9)? "Conditioning" and "learning" are used inter-

changeably (for example, page 60). Is a young bird being *conditioned* when it is making initial associations?

Leading the reader repeatedly to fundamental questions is one of the best features of Mrs. Nice's work. Many times it is the brevity with which these questions are treated that is responsible for this effect. From any point of view, the values and aids offered by Mrs. Nice's work to active students of birds are innumerable. Taken as a whole, the two volumes on the Song Sparrow are an accomplishment of far-reaching significance and constitute an important contribution to several fields of biology.—FRANK A. PITELKA.

A valuable, critical appraisal of Armstrong's book, "Bird Display: an Introduction to Bird Psychology," which may be overlooked by ornithologists has been written by F. A. Beach of the American Museum of Natural History and published in the October, 1943, issue of Ecology, pp. 503-505.—F. A. P.

MINUTES OF COOPER CLUB MEETINGS

NORTHERN DIVISION

AUGUST.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, August 26, 1943, at 8:00 p.m., in Room 2503, Life Sciences Building, University of California, Berkeley, with Vice-president Lewis Taylor in the chair.

Professor Vorhies of the University of Arizona was introduced and reviewed the recent highlights of bird study in the Tucson Region. Species found included Black-bellied Tree Duck, Northern Flicker, and Boat-tailed Grackle

Mr. Harwell reported hearing a Great Gray Owl at the lower end of Tuolumne Meadows, and Mr. King reported the Virginia Rail and the American Egret in Yosemite Valley.

Following a short discussion of the destruction of rice by ducks in the Sacramento Valley, Dr. Taylor introduced the speaker of the evening, Mr. Telford Work, of the Stanford Medical School. Mr. Work's subject, "Golden Eagle—King of the Air," was illustrated by colored motion pictures which depicted not only the nesting activities of the eagles, but also the techniques used in making the study and the difficulties encountered in the course of the field work.

Adjourned.—ROBERT W. STORER, *Acting Secretary.*

SEPTEMBER.—The regular monthly meeting of the Northern Division of the Cooper Ornithological Club was held on Thursday, September 23, 1943, at 8:00 p.m., in Room 2503, Life Sciences Building, University of California, Berkeley, with President Robert C. Miller in the chair and about 65 members and guests present.

Dr. A. H. Miller reported finding a Western Kingbird, Pine Grosbeaks, and a Lewis Woodpecker in meadows bordered by lodgepole pines at 8000 feet in Alpine County. Mrs. Kelly reported a Yellow Warbler on September 22 on the University campus, and a Russet-backed Thrush on September 21 and Warbling Vireo on September 23, both in Alameda. Mrs. Allen saw a Townsend Warbler in Berkeley on September 15, and Dr. R. C. Miller observed a party of Bush-tits in a cornfield on September 19.

The meeting was then turned over to Mrs. Junea W. Kelly who spoke on the shorebirds of the San Francisco Bay region. The speaker began by discussing the field marks and characteristic habits of the common species found in the region and went on to describe daily and annual rhythms of the birds. Mrs. Kelly concluded by telling the best seasons, tides, and places to observe shorebirds and outlined several interesting problems which remain to be worked out with respect to the local Limicolae.

Adjourned.—ROBERT W. STORER, *Acting Secretary.*

SOUTHERN DIVISION

OCTOBER.—The regular monthly meeting of the Southern Division of the Cooper Ornithological Club was held Tuesday, October 26, 1943, at 8:00 p.m., in Room 145, Allan Hancock Foundation, Los Angeles, with President I. D. Nokes in the chair.

Applications for membership were read from Richard M. Griffith, Jr., 1201 Virginia Road, San Marino, California, proposed by Stuart O'Melveny; T. L. Quay, Ensign, H*V(s), U.S.N.R., U. S. Naval Air Station, Glynco, Georgia, proposed by John McB. Robertson; and from Earl Junior Larrison, 1420 North 48th Street, Seattle 3, Washington, proposed by W. Lee Chambers.

Mr. H. L. Cogswell reported that a Black-chinned Hummingbird had three nests in his yard during the past season. From the first it raised two young; the second it abandoned after laying eggs; the first nest was used again for the third nesting from which young were successfully raised. Young from the first nest were being fed while incubation of eggs of the second set was proceding. Dr. Nokes stated he had seen Vermillion Flycatchers likewise feed young and immediately afterward go to a nest and incubate eggs. Mr. Ed Harrison reported a recent observation of a large flock of shearwaters near Long Beach, Oregon.

An interesting talk was given by Mrs. Mary V. Hood, in charge of Nature Study among Boy Scouts of the Los Angeles area; this was illustrated by beautiful slides in color of birds, mammals, wild flowers and secnery.

Adjourned.—WALTER W. BENNETT, *Secretary.*

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No. 19, 1929 Birds of the Portland Area, Oregon; 54 pp., 21 illustrations - - - - - - - - - - - $ .50
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Bird Art Catalogues

Catalogue of an exhibition of paintings by American Bird Artists, First Annual Meeting, Los Angeles Museum, April, 1926; 24 pp. - - - - - - - - - - $ .50

Catalogue of the work of Major Allan Brooks shown in connection with the third annual meeting of the Cooper Ornithological Club May 4-6, 1928, under the auspices of the San Diego Society of Natural History, Fine Arts Gallery, Balboa Park, San Diego, Calif.; 10 pp. - - - - - - - - - - - - - - $ .25

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Other Publications

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By C. BARLOW

Report of the Birds of Santa Barbara Islands. Pub. No. 1, Pasadena Acad. Sci., August, 1897; 26 pp. - $1.00
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Birds of the Pacific Slope of Los Angeles County. Pub. No. 2, Pasadena Acad. Sci., March, 1898; 52 pp. $ .25
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